THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LX.

SATURDAY, APRIL 9, 1892.

No. 15.

ORIGINAL ARTICLES.

THE RELATION OF BACTERIA TO DISEASE!

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OF COLORADO SPRINGS.

In the evolution of modern scientific thought it is interesting to observe how many of the theories deduced from the exact methods of research and the careful experimentation of to-day, seem to have been anticipated in the speculations and conceptions of past ages. The atomic theory of matter that is at the basis of those most exact of modern sciences, chemistry and physics, was apparently already contained in the teachings of Democritus. The germtheory of disease is almost of equal antiquity, and the latest investigations in modern bacteriology indicate the development of certain views that seem like the rehabilitation of the humoral pathology of the past, with its crases and dyscrases, its humors and its diatheses. I say advisedly seem, for on closer examination, although the superficial resemblance is obvious enough, the difference is greater and deeper. For vague conceptions and metaphysical speculations are substituted definite ideas, fixed laws, and determinate relations. But especially in the limitations of the modern theories, and the coëxistence of apparently contradictory, but in reality mutually explanatory natural laws, is this difference the most striking. Especially is this so in the field of medicine. The advance in late years has been immense and rapid; but the very nature of modern methods carries with it the condition that, to be intense, investigation must be limited in its scope and narrow in its field. It is not strange, then, that investigators themselves, under the vivid impression of newly discovered facts in their particular province, sometimes partake of this narrowness, and, extending their deductions beyond legitimate limits, deny the existence of what had seemed to past observers well-established clinical facts, and oppose dogmatic dicta to conservative prejudices. Such, for instance, has been the attitude of certain bacteriologists toward the doctrine of the heredity of pulmonary tuberculosis. However, in casting overboard the rubbish and lumber of past generations, it has often been necessary to rescue valuable truths, apparently contradicted by newer discoveries, and to restore

them to the former position to which further research and wider knowledge again assigns them. And thus, I think, the developments of the last months in bacteriology will explain some of the contradictions between clinical observation and laboratory deductions. It is these currents in bacteriologic investigation to which I alluded in speaking of the apparent rehabilitation of the old doctrines of the humoral pathology; and I would like to select from the results of the immense labor of the past few months some of the more striking facts, and endeavor, in crude outlines, to construct a picture of the present position of bacteriologic science in its bearing on the causation of disease.

The introduction by Koch of his gelatin-plate methods marks a distinct epoch in bacteriologic investigation. It may be compared in its effects to the invention by Sims of his speculum. Apparently nothing more than an improvement in the purely technical part of investigation, it alone has rendered possible the great achievements of modern bacteriology. By its application, in connection with the improvements introduced by other workers in this field, it was shown that certain diseases were always connected with the presence of certain microorganisms; that these presented certain peculiarities in reaction toward certain stains, in their growth in cultures, and in other ways by which they could be distinguished from other apparently perfectly similar forms; that by inoculation with these cultures the disease could be reproduced in animals, or eyen in man-that is, that those microorganisms were specific for certain diseases, or, in other words. were their cause. In the enthusiasm excited by these discoveries, investigation was naturally directed to the detection of new pathogenic organisms, their classification and life-history. This may be called the morphologic period of bacteriology. As is the case with all methods, however, the time arrived when the results began to become more meager. Arrived at this point, investigators began to review the work accomplished, and, having proved that certain diseases were due to certain specific bacteria, a new question began to force itself on them, and demand their attention. This question was: How is the microorganism the cause of the disease? With the asking of this question it began to be realized that the greater part of the task was yet to be accomplished, and bacteriology entered on the second stage, which I would term the bio-chemical.

¹ Read before the El Paso County Medical Society.

This stage, fraught with the most wonderful possibilities for the recognition, the prevention, the cure of some of the most destructive and deadly of diseases, by the application to therapeutics of the knowledge gained by these investigations, demands our recognition and attention.

Life is the expression of chemical changes in the organism. Substances are introduced from without, undergo various changes, and the results of these changes are finally ejected from the organism in the form of bodies, infinite in number, complex in constitution, and varied in their properties. The undue retention of these products in higher organisms is accompanied by serious injury to the organism itself. By analogy, then, the metabolic products of bacterial life might be important, or even chief factors in the production of disease in the organisms in which they have their parasitic existence. It had been shown that by the introduction of pure cultures of a specific bacterium into an animal, the particular disease could be reproduced with almost mathematic certainty. If, now, instead of the microbe, the metabolic products, entirely separate from the microbe itself, be introduced, these, if they are the important factor, should reproduce the symptoms of the disease. This has been found to be the case. In illustration, we will take diphtheria. It has been proved, beyond doubt, by repeated and careful investigation, that the majority of cases of real diphtheria, and especially those of a malignant nature, are due to a peculiar microphyte called the Klebs-Löffler bacillus, found in the diphtheritic membrane. In 1888 Roux and Yersin published the results of their experiments in this direction. Having cultivated the bacillus in bouillon, and having tested in animals the virulence of the culture containing the bacilli, they proceeded to filter the bouillon through the porcelain cylinders of the Chamberland-Pasteur filter. Animals inoculated with the clear filtrate thus obtained, which was also shown by further tests to be entirely free from germs, developed all of the symptoms of diphtheria, including the characteristic paralyses, in the same manner as when subjected to inoculation with cultures of the virulent bacilli. Here, then, we have a case in which the metabolic products of bacteria, introduced into the system and circulating through its channels, are undoubtedly the chief factor in the disease. Accordingly, our attention must be directed to these products of bacterial life; they must be isolated, as far as possible, and examined with reference to their effects on animals; their course and ultimate fate in the organism must be ascertained; the means of defence which the organism possesses are to be studied, and methods for assisting these, or in other ways combatting the poison, must be invented-a task the magnitude of

which can only be conceived when we realize how inadequate are our means of investigation, and how complex and elusive the substances to be examined. Let us, however, see what has been accomplished. First, let us examine what has been ascertained regarding the metabolic products of bacterial life.

Simple mention, without further discussion, may be made of some of the more familiar products, of subordinate importance from a pathogenetic standpoint. Such are carbonic acid, ammonium carbonate, the various fatty acids, and other products of fermentation and putrefaction, such as alcohol, various offensive gases, indol, skatol, trimethylamine, and the like. Of more importance are the various ferments that, independent of the bacteria themselves, are able to bring about striking chemical changes, and which are comparable to the digestive ferments, like pepsin and trypsin. It is possible, and even not improbable, that some of the deadly poisons to be referred to later may accomplish their work in a similar way.

Another class of substances, discovered in late years, and of immense importance and practical interest, are the leukomaines and ptomaines. Leukomaines are substances elaborated by bacteria, possessing certain distinct chemical characteristics, by which they can be arranged in a class by themselves. They are basic, form with acids crystalline salts of a definite composition, and give the chemical reactions of the alkaloids, and are similar in every way to the alkaloids of vegetable origin, such as quinine, morphine, atropine. Ptomaines is the term applied to such leukomaines as possess poisonous properties; and, in fact, certain of the ptomaines are among the most intensely poisonous substances known. Ptomaines are produced not only by pathogenic bacteria, but also by bacteria outside of the system, which, when introduced directly into the system, are harmless saprophytes. Such bacteria thrive in decomposing meat, fish, milk, and the like, and the poisonous qualities of the ptomaines generated therein have been only too often demonstrated by involuntary physiologic experiments. It is worthy of note that these substances are usually produced in the first stages of change, even before the meat may have developed that haut gout which some tastes demand, and are all the more dangerous on this account. As a familiar example of such ptomaines may be mentioned tyrotoxicon, which has been found in icecream, and has occasioned the development of severe toxic symptoms on various occasions. Further, it is probable that in the intestines substances of a similar nature are produced, and the absorption of these and other toxic bodies of like origin is in all probability the chief factor in producing the symptoms of cholera infantum, and,

when the invasion by a specific organism occurs, the symptoms of cholera Asiatica. In another class of cases, in which the microphyte effects its entrance directly into the organism, and grows and multiplies either in a limited portion, or generally diffused throughout the fluids and tissues of the body, ptomaines, or as they are more frequently termed under these circumstances, toxines, play a certain part in preventing the development of specific symptoms. Thus, in tetanus one of the active principles is a toxine called tetanine. This was first discovered, obtained in a pure state, and studied in reference to its toxic properties by Professor Brieger, of Berlin, to whose investigations our knowledge of ptomaines, as well as of toxalbumins, to be mentioned later, is principally due. Having thus discovered tetanine, and studied its properties by experiments on animals, he was able to demonstrate its presence directly in the arm amputated from a man affected with tetanus, and thus for the first time prove the occurrence of toxines in the human body.

The property of crystallization of the ptomaines and toxines greatly facilitates their investigation. It renders possible the isolation of these bodies in a chemically pure condition, and the study of the physiologic action of the pure substance. They can be analyzed, their empiric and rational formula can be fixed, and their chemical relations ascertained. Thus, for instance, cadaverin and putrescin, the names of which indicate sufficiently their places of occurence, have been found to be penta-methylene-diamine and tetra-methylene-diamine, respectively. It is not inconceivable that some of these bodies, or variations of them, may be found to possess therapeutic value.

The next group of substances that recent investigation has discovered among the metabolic products of bacterial life is one that has excited the keenest interest on all sides, for these seem to represent the specific poisons of various infectious diseases. They were termed toxalbumins by Professors Brieger and Frankel, who were the first to isolate them and recognize their nature, and our knowledge of them only dates back to March, 1890, when the results of their researches were published. The name indicates their relation to the group of albuminous substances, and, at the same time, suggests the difficulties necessarily attending their investigation. As opposed to the crystallizable ptomaines and toxines, we have colloid, amorphous substances, which give certain of the reactions of the albuminoids, and which are exceedingly difficult to separate from one another, and to obtain in an approximately pure state. They appear, many of them, to be extremely unstable, and to break up during the ordinary and most careful manipulations. And it is doubtful whether the substances so far obtained, representing

the purest and most active preparations, may not be largely composed of inactive albumoses, to which small amounts of the really active principle are either chemically or simply mechanically attached. This is one of the many problems awaiting solution by future investigators.

In the researches of Brieger and Frankel already referred to, special attention was devoted to the specific poison of diphtheria. They succeeded in isolating a toxalbumin which, introduced into the system of guinea-pigs and rabbits, produced the same effects that Roux and Yersin obtained from the sterile infiltrate containing the various products of the vital activity of the Klebs-Löffler bacilli. This toxalbumin has been further studied by Wasserman and Proskauer, in the Institute of Hygiene in Berlin, and the results of their investigations were published in the Deutsche med. Wochenschrift last April. A description of the methods employed, and the results obtained, will give a very good idea of the present work in this line. The diphtheria-bacilli are cultivated in ordinary meat-water bouillon, with the addition of 1 per cent. of peptone and 1/2 per cent. of Cultures about three weeks old were filtered through porcelain filters, and the filtrate, of which the absolute sterility had been determined by further tests, was concentrated to about a tenth of its volume, in a vacuum evaporator, at a temperature of about from 27° to 30° C. This concentrated filtrate was then freed as far as possible from peptones and globulins by dialysis with distilled water three times for twenty-four hours each time. The peptones and globulins thus obtained were found to be non-The fluid remaining behind in the poisonous. dialyzer was filtered until it was clear; to the clear filtrate thus obtained was added ten times its bulk of from 60 to 70 per cent. alcohol, and then allowed to stand twenty-four hours. This was then filtered, and the precipitate which had formed was collected on a filter. The diluted alcohol, being allowed to drop into absolute alcohol, gave a precipitate which, having been found harmless, we will ignore. The other precipitate which had been produced by the diluted alcohol, and then collected on a filter, was dissolved in a small amount of water, and the solution then treated with double the amount of a saturated solution of ammonium sulphate, to free it from peptones. The precipitate thus formed was re-dissolved in water, freed by dialysis from the ammonium sulphate, and then again treated with absolute alcohol. This procedure of dissolving in water and precipitating in alcohol was repeated until the solution in water was perfectly clear, whereupon it was again precipitated by means of the alcohol, and the precipitate thus obtained was dried at 37° in vacuo. The substance thus obtained was a fine white powder, perfectly soluble in water,

and the solutions gave the typical reaction of the albuminous substances.

The injection of 10 milligrams, i. e., 1 grain, of this substance caused the death of rabbits in from three to four days; of 5 milligrams, in two weeks; of 3 milligrams, after more than three months. The long time required before the death of the animals is very striking; they were sick during the whole period, wasted away, took little food, and often developed paresis of the extremities before death. Further experiments were conducted by the same authors to ascertain whether they could find the same substance in animals inoculated with the bacilli. In this they were also successful. In the bodies of rabbits that had succumbed to this infection, they could, by the same methods, obtain a similar white powder, which, however, proved even more virulent than that from the cultures, for 0.2 milligram, i. e., 300 grain, injected in a vein of the ear caused the death of a rabbit in fourteen days, with the development of the most typical symptoms of diphtheria in animals.

By similar methods Brieger had obtained a toxalbumin from the anthrax-bacillus, which caused the death of animals with the same symptoms as in those inoculated with the bacilli. And Immerwahr, in a communication last July, reports his experiments with a toxalbumin obtained from animals inoculated with the tetanus-bacillus, and further relates that he succeeded in isolating the toxalbumin from the leg amputated from a man suffering with lockjaw, and with it had inoculated five guinea-pigs, all of which died within forty-eight hours, developing typical tetanus.

Another class of albuminous substances of a poisonous nature is found among the peptones. Even the peptones resulting from normal digestion, when introduced directly into the circulation, were proved by Woolridge and Schmidt-Müllheim to act as poisons, and it seems that these, in passing through the intestinal epithelium, undergo modifications necessary for their further utilization. Some years ago, Brieger obtained from peptones a body possessing actively poisonous properties, which he called peptotoxin, but the fact remained isolated. In an article in the Deutsche med. Wochenschrift, of December 31, 1891, Hueppe gives an account of his work with the cholera-bacillus, and describes a body obtained from cultures of it under certain conditions, possessing all the properties of a peptone, and which apparently is the specific poison of cholera.

Allied to toxalbumins, but differing from them in certain respects, is another class of albuminous substances, about which comparatively little is as yet known. These substances, which are likewise poisonous, are not destroyed by high temperature—sometimes they will even stand repeated boiling.

In certain cases, at least, they seem to be the active principle of vaccines that confer a more or less lasting immunity.

These various substances so far referred to, concerning many of which our knowledge is yet so limited, are all metabolic products of the vital activity of the bacteria. In addition to this, there is evidence that the dead bodies of the bacteria themselves, as distinguished from the metabolic products of the living bacteria, exert a certain influence on the tissues in which they lie. Thus, Buchner, having subjected cultures of various bacteria to prolonged boiling, separated the dead bacteria from their products, and, having treated the former with dilute caustic potash, obtained proteid substances that possessed marked chemotactic properties, and on injection into animals, brought about reactive inflammation, and even extended suppuration. Likewise, Prudden and Hodenpyl of New York, in their extremely interesting and able papers, in a series of skilfully and carefully conducted experiments along the same lines, have shown that when dead tubercle-bacilli, freed from all their metabolic products, are introduced into the circulation of rabbits, they excite at the place of lodgment a proliferation of the connective-tissue cells in the form of small nodules made up largely of epithelioid cells, and resembling exactly small miliary tubercles, but differing in the very important particular that they show no inclination to necrosis, caseation, or other degenerative changes, but do show a decided tendency toward conversion into connective tissue. In other words, the changes brought about are those that play an active part in spontaneous recovery from tuberculosis.

Having arrived here in our discussion, it seems a proper point for the consideration of Koch's tuberculin, although we are still ignorant of its actual nature. Probably, as at present constituted, it includes various of the substances already enumerated. Tuberculin is obtained from pure cultures of tubercle-bacilli, by extracting with a 4 per cent. glycerin solution, concentrating on a water-bath to, say, a tenth of the original volume, and then filtering. The strength is determined by physiologic experiment on guinea-pigs. Perfectly healthy animals are not greatly affected by moderate doses. Those, however, that have been rendered tuberculous by inoculation eight or ten weeks before, and have reached an advanced stage of tuberculosis, are extremely susceptible, and when a certain dose is reached, die in from six to thirty hours. dead bodies show certain characteristic appearances, by which their death can be shown to be due to tuberculin, and other accidental causes can be excluded. As most characteristic, Koch mentions the constant occurrence of numerous small hemorrhagic

spots, or ecchymoses, on the surface of liver and spleen. The strength of the tuberculin is so graduated that 0.5 gram is just sufficient to kill tuberculous guinea-pigs. After a long series of experiments, Koch has succeeded in obtaining from tuberculin a substance that is fifty times stronger, and which he regards as the active principle in an approximately pure state. This is a grayish-white amorphous powder, soluble in water, and giving various reactions of the albuminoid substances. Koch considers it as belonging to a class of albuminoids differing from any yet known, and believes that homologues will be found among the products of other pathogenic bacteria. The purified tuberculin thus obtained differs in no respect in physiologic action from the crude tuberculin, and thus Koch's hopes that a preparation might be found retaining the curative properties, and free from the other and evil effects, have not been realized. On the other hand, Klebs, of Zurich, who has been working on tuberculin supplied him by Koch, believes that he has accomplished this task. He claims that the evil effects of tuberculin, the violent systemic reaction, the fever, the necrosis, are due to the ptomaines contained in tuberculin, and that, by treating it with certain reagents that free it from these, he has found a substance that will bring about the destruction of the bacilli. According to him, patients treated with this purified tuberculin, which he calls tuberculocidin, improve rapidly, the various symptoms tend to disappear with remarkable promptness, the bacilli break down, lose their staining properties, and finally disappear. It will be noticed that the very point that, for Koch, is the test of the activity of his preparation—that is, the toxic effect on guinea-pigs-Klebs attributes to the action of ptomaines, and seeks to avoid. On the other hand, Koch evidently has no faith in the results claimed by Klebs, and believes that the substance obtained by the latter is merely an inert albumose. Prof. Klebs is a distinguished pathologist and bacteriologist, and a fuller description of his work and his therapeutic experiments will be looked for with great interest, especially as certain British investigators, particularly Hunter, have arrived at similar views respecting the constitution and action of tuberculin. But the evident skepticism of Koch, and of Brieger, who has been aiding Koch, together with the disappointed expectations attaching to tuberculin hitherto, certainly will moderate the hopes that Klebs's announcement might otherwise have excited. On the other hand, it must be emphasized that tuberculin is by no means the utter failure that many are inclined to assume. It has been conclusively proven that it has the power to arrest tuberculosis in guinea-pigs and rabbits; and even in human beings evidence is not

wanting of a curative power, although this, in the majority of cases, is more than counterbalanced by its destructive effect as ordinarily used. I am convinced we have reason to hope that the untiring zeal of the many investigators now seeking the solution of this problem will discover the modifications or the changed conditions necessary to accomplish in man the results obtained in the animals mentioned.

The non-realization of the expectations raised on the introduction of tuberculin tended to bring about a certain reaction, and in the minds of the unthinking to cast discredit on the etiologic connection of tubercle-bacilli with human tuberculosis. And yet reflection must show, on the contrary, that it would really be an additional link in the chain of evidence, were such necessary. Comparatively large doses are borne by healthy individuals, or by those suffering from other diseases, without great discomfort; and yet in individuals in whom there is even the beginning of tuberculous trouble, minimal doses bring about a violent reaction. What could more plainly establish the peculiar relation between this product of the growth of tubercle-bacilli outside of the body and tuberculosis of the human subject?

Tuberculin is, in many senses, a remarkable substance, and particularly so in its elective action on tuberculosis. Recently, however, Kalning, in Riga, succeeded by the same process in extracting from the glanders-bacillus a similar substance, which, injected in healthy horses, had but little effect; but in horses affected with even the first beginning of glanders, caused a violent reaction. Kalning was a martyr to his scientific zeal, for he died from glanders contracted in his studies; but his work was continued by others. The substance called mallein has been shown to be an invaluable reagent for the detection of glanders in its earliest stages, and offers a valuable means for stamping out this disease.

We have up to this time considered the one side of one subject-the bacterial side. But bacteria are not the disease, nor are the agents with which they accomplish their effects on the organism the disease. The reaction of the diseased individual corresponds more properly to this conception, and the organism affected demands our attention, if we are to properly discuss the subject. Do not let the bacilli make us forget the cell, was the timely warning of Virchow, the creator of cellular pathology. And attention having been turned in this direction, many remarkable facts have been brought to light by recent investigation. I fear I have already exceeded the appropriate limits of a paper for this occasion, and I shall not be able to do justice to this side of the question. The subject of chemotaxis, and its importance, is very clearly treated in the papers of Prudden, already mentioned; and in

the Croonian lectures delivered by Burdon-Sanderson the same subject is discussed, and likewise Metschnikoff's doctrine of phagocytosis-a doctrine that, by the way, in crude outlines appears to have taken a vigorous hold on the lay imagination, but the importance of which seems greatly lessened by recent investigation. Of much greater importance is the toxic power that the blood has been shown to possess on most forms of microphytes. It is a singular circumstance, and one suggestive of the all-absorbing power of certain directions of research. that this fact, although known for some years, should not sooner have excited the interest of investigators that its importance deserved. In the last three or four years, however, many remarkable and important facts have demonstrated that just here lies the field for the practical application to therapeutics of the knowledge accumulated by bacteriologic research. It has been shown that blood has a directly destructive effect, not only upon most pathogenic organisms, but also upon their toxic products; it was next demonstrated that this power resided in the serum of the blood as opposed to the morphologic elements; and, finally, that it was due to certain proteid constituents of the serum, as yet not more definitely known. Thus, in the struggle for existence, the organism combats the microphytes with their own weapons.

It has been shown that the destructive action of the blood on these parasitic organisms is decreased by conditions of malnutrition and by surroundings unfavorable to the most healthy development. Here we have what suggests the rationale of our modern treatment of pulmonary tuberculosis. By improving the nutrition and placing the patient in the most favorable hygienic conditions, we increase the toxicity of the blood for the tubercle-bacilli. It has been further ascertained that the blood is not equally toxic for all microbes, and that the blood of different animals differs in this respect; in certain animals it is toxic for certain pathogenic bacteria, which are not affected or are influenced in a less degree by the blood of other animals. And this brings us to the subject of immunity. Why are some animals affected by certain diseases from which others are exempt? Why are individuals who have passed through certain diseases immune from these diseases for the future? Why does inoculation of man with a certain disease of the cow render him less susceptible to a disease that otherwise might attack him? We may now confidently assert that this is due to a certain constitution of the blood.

I should like to call your attention to some of the facts relating to this subject. In considering a problem, all that simplifies facilitates a solution. From this point of view a very brief description of a few recent experiments by Ehrlich, to whom we owe so

much suggestive work, is, I think, adapted to throw some light on this subject. The difficulty of obtaining bacterial toxalbumins in a pure state and in sufficient quantity suggested to Ehrlich the idea of taking toxalbumins of vegetable origin, of which recent pharmaceutic research has discovered a number. One of these-ricin-the toxalbumin of castor-oil beans, is an intensely poisonous body, of which, judging from experiments on animals, 3 grains would be sufficient to kill an adult man. Guineapigs are so peculiarly sensitive to this poison that I gram, i. e., 15 grains, would be sufficient to kill 1.500,000. Ehrlich took as the subject of his experiment white mice, and by feeding them very small doses, and then increasing the dose and injecting it hypodermatically, he was able in twenty-one days to inject four hundred times the amount of the dose originally poisonous, and later to increase it to one thousand. In other words, the mice had acquired a certain immunity to the poison. Now comes the suggestive point. Ehrlich has ascertained that by mixing ricin-solution with five times its amount of the blood of animals possessing a high degree of immunity, the ricin loses its toxicity and causes no symptoms when injected into animals. Further, by injecting the blood of white mice rendered immune into the body of other white mice, he was able to confer a considerable degree of immunity, viz., forty times the original. The inevitable inference from all this is that the blood of immune animals must contain a substance that neutralizes and probably destroys the poison. This is likewise probably the explanation of the earlier experiments of Salmon and Smith, in this country, who were able to obtain immunity in pigs against pig-typhoid, by inoculating them with sterilized cultures of the specific microphyte; and of Chamberland and Roux, who rendered guinea-pigs immune from anthrax, or splenic fever, by filtering cultures of the anthrax-bacillus, and injecting the sterilized filtrate. In a more elaborate and systematic series of experiments, Behring and Kitasato have shown, in reference to tetanus and diphtheria, that it is possible with the sterile filtrate from cultures of these bacilli to render animals insusceptible to these diseases; that the blood of animals rendered insusceptible neutralized the poison of the toxalbumins; and that when the blood of immune animals is introduced into susceptible animals, the latter acquire immunity. And, further, the most suggestive point was their success in thus rendering guinea-pigs immune with the blood of immune rabbits, or, in other words, the transference of immunity from one species of animals to another. And Behring further alludes to certain results obtained, not as yet made public, indicating the possibility of isolating the active principle, or obtaining

it in a concentrated form. As, in diphtheria, the substance instrumental in bringing about the immunity seems, according to some recent investigations of C. Fränkel, to be a harmless albumose, the practical significance is almost startling.

That there is in the blood of immune animals a substance that may be termed an antitoxine, seems, in accordance with all of these investigations, established beyond doubt. This antitoxine is probably gradually developed, and only when it reaches a certain strength is the inhibitive effect apparent; but in certain diseases it would seem that when it reaches this point the effect is very rapid. Such is the case in diseases that terminate by a crisis, as pneumonia. And it is interesting to know that in pneumonia G. and A. Klemperer, of Berlin, claim that by the injection of from 4 to 6 c.c. of serum, taken at the time of the crisis, from rabbits inoculated with pneumonia-cocci, they are able to produce a critical fall of temperature in patients suffering from pneumonia.

Even more definite is the use of the antitoxine of tetanus, as described by Dr. Schwarz, assistant at the surgical clinic at Padua. He reports the cure of a boy, suffering from traumatic tetanus, by the injection of the antitoxine prepared from animals by Tizzoni and Cattani, and refers to three other cases treated by other Italian physicians with the same successful result.

I have attempted in the foregoing to give a rough outline of the present state of bacteriologic research in reference to disease, and to indicate some of the currents now agitating it. When we consider that, so far, our studies have been solely with the bacteria, and practically with only one division of these -the schizomycetes-we can recognize how much remains to be done. In only two diseases-malaria and dysentery-have organisms belonging to a higher form of life-the plasmodium and the ameba coli-been shown to be the probable cause, and our knowledge of these is of the scantiest. Until the plasmodium has been successfully cultivated outside of the body, little can be known of its biologic properties; and, as it is now considered probable that various other diseases-notably, the acute exanthemata-are due to similar organisms, our knowledge of the causation of disease presents great gaps. But what we have recently learned is immense in its suggestiveness, and the prospect opening before us of achievements in therapeutics, and the control of disease, of knowledge of the subtle processes of life, and the intimate mysteries of Nature, must, with increasing force, appeal to our imagination, rekindle our faith, and redouble our enthusiasm for our most peculiar and noble calling.

Carl Crede, the distinguished gynecologist and obstetrician, died recently at Leipzig, aged seventy-two years.

A COLLECTIVE INQUIRY CONCERNING INTURATION

By RICHARD B. FAULKNER, M.D., OF ALLEGHENY, PA.

INTUBATION in diphtheria is not viewed with favor by most authorities. H. R. Wharton does not think intubation will supersede tracheotomy in diphtheria, and he thinks that it is not being as widely employed in these cases as it was a year or two ago. N. Senn does not approve of intubation for diphtheritic or any other form of septic laryngitis. Hunter McGuire says: "I have never tried intubation of the larynx in diphtheria. I have never heard of its being done in or about this city that the patient did not die. I had rather myself resort to tracheotomy."

To the question: Do you think that intubation will be able to hold its own as a resort in diphtheria? D. Haves Agnew answered tersely, "I do not;" Thomas G. Morton, "No;" H. Tuholske, "I do not think so;" Louis Starr, "Not in severe cases;" John Ashhurst, Jr., "It will never supplant tracheotomy, and I am disposed to think that it will be less often resorted to in the future than it is at present;" A. C. Bernays, "I do not think that intubation will prove successful in diphtheria;" R. W. Lovett, "I do not believe that intubation will hold its own when contrasted with tracheotomy in severe cases of laryngeal diphtheria;" C. H. Mastin, "It has not stood the test, and I am certain it will fall into disuse. It has always appeared to me as a most unsurgical procedure, and one that I have always opposed."

The first strong criticism of intubation was by Symond (Brit. Med. Journ., November 19, 1887), following the article of Macewen (Brit. Med. Journ., July 24 and 31, 1880), the first of the present revival of the operation. In the late (third) edition of his work on Operative Surgery, Stephen Smith describes the operation of intubation, but refrains from any comment upon it. Dillon Brown (Boston Med. and Surg. Journal, 1891, page 437) is quoted as saying that "many of the tubes in use are badly constructed." In the ordinary tubes an artificial epiglottis introduces fresh sources of danger. Three sets of tubes are described: six for children, ten for adults, seven of large caliber for foreign bodies and

false membranes.

The perplexities of the technique are well described by G.W. Gay (Comparative Merits of Tracheotomy and Intubation): "In young children the space in which the necessary manipulations take place is limited; the larynx is small, deep, and movable, and made more so by the struggles of the patient. If the parts are extensively infiltrated and thickened it is by no means easy to determine the different structures by touch." Extraction of the tube is even more difficult than introduction. Fifteen cases of permanent lesion, from laceration of the larynx during extraction, occurred in the practice of J. M. Bleyer alone within two years. Two cases of perforation of the laryngeal wall occurred in the practice of Joseph O'Dwyer, as related by Gay.

The glottic aperture varies greatly in children of the same age, and it is at times impossible to select a tube of the proper caliber. Hence, occasionally, the tube falls into the trachea and bronchi. In a case reported by Moll (Annual Assembly of Belgian Laryngologists, May 17, 1891), the child died from a tube becoming buried in the trachea. In another instance, in the practice of Bleyer, in the latter part of November, 1891, the tube fell into the trachea during an attempt at extraction, and was removed by tracheotomy, performed by Frederic S. Dennis. In two cases reported by Prescott and Goldthwait (Boston Med. and Surg. Journal, December 31, 1891), "the tubes were drawn into the bronchi." Both patients died. The presence of the tube diminishes greatly the normal caliber of the glottic aperture.

The death-rate in diphtheria in epidemics of average severity is 10 per cent. Three deaths of every four are occasioned by diphtheritic sepsis or exhaustion, the remaining one by diphtheritic laryngeal stenosis (Jacobi, monograph on Diphtheria, 1880). Accordingly, a quarter of 10 per cent., that is, 21/2 per cent., of the whole number of cases admit of resort to intubation. O'Dwyer's claim of 29 per cent. of recoveries from intubation, means 20 per cent. of this 21/2 per cent. Two and one-half per cent. being the number admitting of operation, it therefore requires forty cases of diphtheria to furnish one of stenosis. Based on this calculation, the fifty intubations performed in this (Allegheny) city, within the past six months, required 2000 cases of diphtheria. In 1890, Jacobi (Internat. Med. Congress, Berlin; paper "On Diphtheria in America") stated that the death-rate from membranous stenosis is not nearly so great as in 1880. Therefore, the number of cases now required to furnish fifty intubations would be considerably more than 2000.

Lennox Browne, in the recent (third) edition of his classical work on *Diseases of the Throat*, has written: "It is probable that, the laryngeal mirror not having been used in the majority of cases for the purpose of forming an exact diagnosis, the operation may have been performed for mere spasm."

F. E. Waxham uses the laryngoscope, in adults, to place and to extract the tubes. He says: "When done by one who is not an expert, intubation is the most brutal and unsatisfactory operation ever devised by man." Bleyer (Internat. Med. Congress,

Berlin, 1890, "Report of 512 Intubations") states that "I cannot dwell too strongly upon the necessity of a forced or normal laryngoscopic examination before entering upon the operation." Without laryngoscopic examination it may, at least, be urged that the condition of the larynx is not proven. In Chicago, intubation is in the hands of laryngologists, and especially Ingals, Casselberry, and Waxham. The same holds true in Louisville—Cheatham, Pusey, Ray, and Dabney doing the work. Also in St. Louis the same rule holds true.

O'Dwyer has written that "The dangers of intubation are almost nil, but only so in the hands of an expert, and experts are not made in a week, or a month, or even a year—in fact, there are very few yet in existence. That intubation is easy is one of the delusions that still exist in regard to the operation." In the course of a debate upon intubation I heard a gentleman remark that "It is just as easy to pass a tube into the larynx as it is to pass a catheter into the urethra." As a comment upon that remark, Dr. O'Dwyer says that "Comparing intubation to catheterization of the urethra is nothing less than a crime, because it encourages everyone who has a case of croup to try it, often with the result of choking his patient to death."

In my neighborhood, lately, a child died and was buried with an intubation tube in its throat. I learned, later, that it was the common thing for those who died after intubation, to die and to be buried with the tubes in their throats. Popularity of intubation must be viewed with the gravest apprehension. The operation is dangerous, difficult, inferior to tracheotomy, and can never be depended upon. In many instances it is the literal truth that "life hangs by a thread." And when between this life and eternity a mere thread, any strand of which may be imperfect, is all that the surgeon can interpose, it shows the utter prostitution and the absurd extremity in the application of a noble art. No other operation seems, à priori, so in conflict with common sense. In the hands of the inexpert-and in this era of cheap medical colleges be it remembered that that genus is multiplying rapidly—the practice of intubation is the practice of manslaughter.

1. Under what circumstances occurring in diphtheria do you consider intubation necessary?

J. Lewis Smith: When there is that degree of dyspnea that the child is restless, and the suprasternal and infra-sternal regions recede during respiration.

2. In that class of cases in which tracheotomy has been considered appropriate, do you believe intubation to be a proper substitute?

J. Lewis Smith: It is a proper operation, and if the dyspnea is not relieved by it, or if it returns, the presence of the tube does not prevent the subsequent performance of tracheotomy. E. F. Ingals: In all children under five years of age. J. Solis-Cohen: Not as a rule.

3. Do you think that in cases of diphtheritic membranous exudation we should always be pre-

pared to perform tracheotomy?

Charles McBurney: Unquestionably. Waxham: Yes. Gay: Intubation should not be undertaken without having the facilities for tracheotomy at hand. O'Dwyer: Those with only a limited experience with intubation should be always prepared to do tracheotomy.

4. Is there, briefly, any serious objection to the performance of intubation which exists always in every instance of diphtheritic laryngeal stenosis,

either inflammatory or membranous?

J. Lewis Smith: No; if the obstruction to the respiration causes suffering to the child, or any notable dyspnea. Ingals: No, providing it is done skilfully. Waxham: The difficulty of performing it. J. Solis-Cohen: Yes; the presence of pseudomembrane, which may crowd down in front of the tube and occlude it. The absence of an attendant competent to remove the tube promptly in an emergency. Gay (This answer is interpolated chiefly from his article on the "Comparative Merits of Tracheotomy and Intubation"): Accidents are less common after tracheotomy than after intubation. While intubation is a most valuable operation, it is not so free from objections and complications as some of its advocates would lead us to suppose. It may not relieve the dyspnea; the tube may "gum;" may become suddenly occluded, and unless quickly ejected or removed, death will ensue; and there may be great difficulty in feeding the patient.

5. What do you consider the greatest objection

to intubation in diphtheria?

D. Hayes Agnew: The probability of displacing false membrane and blocking up the air-passages. J. William White: Pushing membrane in advance of the tube; difficulty of feeding; plugging of the tube. John Ashhurst, Jr., C. B. Nancrede, Gay, Goldthwait: Difficulty of feeding. Wharton: Pushing membrane in front of the tube; difficulty of feeding. Louis Starr: The difficulty of feeding and the liability of food, especially liquids, entering the trachea through the tube and inducing pneumonia. The risk of the tube slipping into the trachea, or being coughed up and swallowed. The frequent non-success of intubation, subsequent tracheotomy becoming necessary, hence dangerous delay. Cheatham: A false passage; pushing of membrane; ulceration of larynx and trachea from pressure; food pneumonia. T. F. Prewitt: Pushing down of a mass of exudation into the trachea. H. Tuholske: Displacement of membrane; mechani-

cal and continuous insult to part in a state of intense inflammation. C. H. Mastin: I am perfectly certain that the presence of the tube, in glottis and larynx, adds to the local irritation and favors ulceration. William Porter: The tube acts as a foreign body in a larynx already inflamed by disease. The current of air entering the lungs continues to pass through diseased channels. Henry H. Mudd: I believe it is a relief to the child and to the diseased throat to have the air come through the trachea tube, rather than through the diseased pharynx; difficulty of feeding. P. S. Conner: Difficulty in introducing tube; the danger of its slipping down, or being coughed out. R. W. Lovett: In contrasting intubation with tracheotomy the striking point is that when a tracheotomy tube is in place there is a tremendous discharge from it of mucus, pus, and detritus, which is continually coughed out. In intubation cases, there is little of this. It seems reasonable to suppose that this is because it is not raised so easily, and is drawn more into the lungs and bronchi in intubation cases. This seems to me a great practical objection to intubation. It has seemed to me that the percentage of pneumonia was high in the intubation cases that I have watched. In certain cases a dangerously rapid tracheotomy is necessitated by attempts to intubate. In my own experience, twice in the last month, after a careful intubation, the child has stopped breathing as soon as the tube was put in, and instant tracheotomy has been necessary to save life.

 In desperate cases of diphtheria, accompanied by laryngeal membranous exudation, would you justify the resort to intubation equally or preferably

to tracheotomy?

O'Dwyer: The only justification for tracheotomy as a primary operation, is the absence of some one competent to do intubation. Joseph D. Bryant, Cheatham, Waxham: Preferably. Smith, Ingals, Goldthwait, Gay, Bleyer, J. Ewing Mears: As a primary operation. D. Hayes Agnew: No; would resort to tracheotomy. Louis Starr: Tracheotomy; decidedly. John Ashhurst, Jr.: No; prefer tracheotomy. I feel that the patient is safer with a tube introduced through an opening below the larynx, than with one passing through the larynx itself. Lewis A. Stimson: My preference is wholly for tracheotomy. W. T. Bull: In a general way I have formed the conviction that intubation is not suitable for the grave cases. Charles McBurney: My experience is more with tracheotomy. I. William White: Do not consider intubation equal or preferable to tracheotomy. C. H. Mastin: I would not resort to intubation. I cannot convince myself that it is a judicious or proper operation. Tracheotomy is a rational operation. Tuholske: Tracheotomy is vastly superior to intubation. Wharton:

No; decidedly tracheotomy. T. F. Prewitt: Tracheotomy; decidedly. J. Solis-Cohen: All the cases in which tracheotomy is indicated do not do as well as by intubation. Thomas G. Morton: My experience with intubation has not been favorable. John B. Roberts, William Porter, John H. Brinton, A. C. Bernays, C. B. Nancrede, Henry H. Mudd, C. G. Jennings, Ernst, and Sajous: Prefer tracheotomy. R. W. Lovett: Much prefer tracheotomy. If I may quote from our Boston City Hospital figures, up to 1887 the recovery under tracheotomy was 29.05 per cent. in 327 cases. In 392 cases of intubation since that time the recovery is 20 per cent. and a fraction. As these two groups of cases were of the same class, treated in the same institution, by the same surgeons, for the most part, they give ground for the suspicion that in desperate cases tracheotomy saves more lives. My personal experience accords with these figures. ("The Boston City Hospital affords the best opportunity for the study of croup to be found anywhere in this country. When you shall have accumulated the same number of intubations that you have had tracheotomies, it will settle the question of the comparative merits of the two operations in saving life better than thousands of cases collected from other sources." J. O'Dwyer, as quoted by G. W. Gay.) In the comparison, while tracheotomy leads intubation by o per cent., observe that intubation starts with an advantage of a higher gross number on which to compute. Up to September 20, 1888, tracheotomy led intubation by only 5 per cent., in 327 tracheotomies, as against 107 intubations. Conant (Boston Med. and Surg. Journal, December 31, 1891): I have felt that intubation, which at the time it came out was claimed to have a percentage very much larger of recoveries than tracheotomy, was a thing which later on would prove to be fallacious, and the more cases of intubation that are reported the less has grown the percentage of recoveries. The recoveries from intubation are growing proportionally less every year at the Boston City Hospital. Up to January, 1890, the per cent. of recovery was about twenty to twenty-five, and then it fell to fifteen (Prescott).

A. Jacobi has abandoned tracheotomy. He has not performed intubation. From his plain talk (Internat. Med. Congress, Berlin, 1890; paper "On Diphtheria in America") it is evident he thinks more of mercurials than of intubation. "I learned that when the constitutional effect of mercury could be obtained speedily, cases of fibrinous tracheobronchitis got well in an unexpected manner." "During the last six years preceding 1888, I have seen no less than 200 cases, and amongst them recoveries have not been rare. In the practice of no less a man than O'Dwyer, I have seen two cases of

general and laryngeal diphtheria in the same family which got well without any operative procedure." "I have never seen so many cases of tracheotomy getting well as between 1882 and 1886, when the bichloride was constantly used as detailed." "The beneficial effects of mercury are not limited to cases of stenosis, but apply also to those of sepsis." These remarks of Jacobi can be applied to the practice of many physicians in this community. I am gratified to add my testimony to his, for I know of cases of diphtheria now getting well under the mercurial treatment, small doses often repeated, to make the percentage of recovery from membranous laryngitis greater than ever before.

HYDATIDIFORM MOLE, WITH REPORT OF A CASE.

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THE etiology and pathology of the so-called hydatidiform, or vesicular, mole is a subject that has always attracted the attention of the medical profession. In the infancy of the science of obstetrics it was believed that if the parts of the embryo and secundines were not separated and distinctly formed from the mixture of male and female semen, they formed a mass that, when discharged before the fourth month, was called a "false conception;" if it continued longer in the uterus, it was denominated a mola. Another theory advanced was that the growth was independent of conception, and was, in fact, a true hydatid, or acephalocyst, such as is formed in the liver, spleen, and other organs. In this connection Rokitansky (Pathological Anatomy) says: "Cysts are very rarely formed in the uterus; we have not met with a single example in Vienna, and I myself have only inspected one case of uterine acephalocysts."

The admission of this one case by such an authority is sufficient to establish the possibility of the occurrence, and raises a point of some considerable interest from a medico-legal point of view. To Cruveilhier is assigned the credit of first demonstrating that the hydatidiform mole is not due to echinococci, but is, in fact, a degenerated ovum. Velpeau traced the origin of the degeneration to the chorion, while the observations of Professor Robin showed that the envelope of the cysts is identical with the external membrane of the chorionic villi. The accepted theory of pathologists now is that the process is a proliferative degeneration of the villi of the chorion, and a hypertrophy of their investing epithelium and connective-tissue cells, which undergo mucoid degeneration. The pathology being such, it is to be regretted that this antiquated misnomer still clings to the affection,

and that it has not received a title more in accord with the process involved. Search for the primary cause of this degenerative process opens up a wide and interesting field, and one in which but little in-

formation can be gained. Since the abandonment of the echinococcus as a causative agent, various theories have been advanced. Dr. Graily Hewitt (Obstetrical Observations, London) claims that the source of the evil is

fetal, and not maternal; that instead of chorial disease causing disintegration of the fetus, the death of the fetus causes degeneration of the villi. This view of the case is supported by the clinical fact that in the case of twins one ovum may undergo degeneration, while the other may go on to full term, and a healthy, full-sized child be born. The contention, which if established would appear to support this view, that a retained portion of the placenta may undergo a similar degenerative process, has been disproven by clinical observation. Opposed to this theory, again, are the observations of M. Brechet, as quoted by Cazeaux (Theory and Practice of Obstetrics), who reported a case in which a few hydatidiform vesicles occurring on the placenta did not prevent the birth at term of a normally formed child of the usual size. The view perhaps most generally accepted, however, looks to a maternal influence as the causative agent, and this influence is thought by the greater number of observers to be the syphilitic or the carcinomatous dyscrasia. Lusk (Science and Art of Midwifery) says: "That the exciting cause of the hydatiform mole may be a morbid maternal condition is rendered probable by the repeated recurrence of the disease in the same patient, by its coëxistence with inflammatory decidual disease, or with extensive uterine fibroids. It has been found to be most frequent in aged and multiparous subjects."

The probable causes cited do not seem to me to account for the following case:

H., an imbecile, twenty-two years of age, unmarried, was admitted to the State Hospital for the Insane on September 28, 1891. At the examination, on admission, her temperature was found to be 98.5° F.; pulse, 84; tongue clean; and bowels regular. The patient was well-proportioned, and apparently in good physical health. There was no history of syphilitic or carcinomatous disease; a maternal aunt had died of pulmonary tuberculosis. Previously to admission, menstruation had been regular, and her general health good. She had led an immoral life, but had never conceived. A month after coming to the hospital she com-plained of "dyspepsia," with vomiting. Remedies directed to this indication soon relieved the symptoms. An attack of dysentery, which she had at this time, having left her in a weak and somewhat emaciated condition, and the appetite being capricious, she was given a tonic. As the menses had

failed to appear since admission, an effort was made to improve the general health, but no direct medication was resorted to. On the night of January 3, 1892, I was called by the night nurse, who stated that H. was suffering severe pain in the bowels. When I reached her room I found that she had voided a mass that presented the characteristic cystic formation, and precluded any doubt that my patient had given birth to a hydatidiform mole, notwithstanding her assertion that she had passed a portion of her liver. Before my arrival the bulk of the growth had been expelled in two pieces, and at that time she was bleeding, though not profusely. I immediately passed two fingers through the os uteri, which was dilated to the size of a silver dollar, and swept the cavity of the uterus as thoroughly as I was able, removing a quantity of cysts and shreds of decidua. The uterus contracted tightly, and the hemorrhage, which had never been excessive, stopped. She was given a vaginal douche of carbolic acid, 1:40; and two days later, as the temperature had reached 103° F., and the pulse 130 beats per minute, the uterus was washed out with a solution of corrosive sublimate, 1:5000, followed by carbolic acid, 1:50, a few cysts and decidual shreds being removed; an iodoform pessary was inserted, and quinine sulphate, gr. v every four hours, administered by the mouth. To relieve the intense pain and tenderness over the lower part of the abdomen, hypodermatic injections of morphine sulphate, gr. 14, were given and hot turpentine stupes applied locally. Under this treatment the temperature rapidly subsided, and the patient made a good recovery. The entire growth constituted a mass slightly larger than a child's head; the cystic degeneration was not complete, and the amniotic cavity was empty. No trace of a fetus could be found; evidently the process had begun shortly after conception.

The points of interest in this case, to me at least,

1: The absence of all the classical signs of the presence of a mole. There was nothing like a hemorrhage from the time of her admission till the birth of the neoplasm. No cysts were passed. The character of the institution renders exceptional facilities for making sure of these facts. The abdominal enlargement, usually disproportionate to the period of gestation, was so slight as to escape notice in a patient under observation for amenorrhea; there was no enlargement of the breasts. Owing to the mental condition of the patient no information could be gained as to the time of conception, and as she made no complaint and manifested none of the usual signs of pregnancy, the condition was not diagnosticated.

2. The lack of apparent cause for the degenerative process. The patient is young, a primipara, in good health until within a few weeks of delivery; and with the exception of one case of pulmonary tuberculosis, as stated, the family history shows no hereditary dyscrasia.

EXAMINATION OF SOME COMMERCIAL VARIE-TIES OF HYDROGEN DIOXIDE.

BY HENRY LEFFMANN, M.D., AND

WILLIAM BEAM, M.D.,

HYDROGEN dioxide, generally inaptly called hydrogen peroxide, has found, in recent years, many valuable applications in preventive medicine and therapeutics. The pure article being very difficult to prepare and preserve, the commercial forms consist of dilute solutions in water, containing a very small amount of actual dioxide. Since the medicinal value of the article depends on its strength and freedom from impurities, it is important to make some comparative determinations on these points of the brands of hydrogen dioxide now offered in the market. The tests employed have been frequently described, and it will not be necessary to repeat them here. Among the impurities, free acid is the most objectionable, on account of its irritating action.

Comparative tests of commercial brands have from time to time been published in medical and pharmaceutical journals, but usually without indication of the identity of the samples, and, therefore, of but little practical value. In judging of the strength of any sample, the unavoidable liability to decomposition must be regarded. On the other hand, the proportion of free acid and of metallic salts will not be appreciably affected by the lapse of time.

In the following examination care was taken to secure fresh samples, and they were all in the original, unbroken packages when delivered to us. The proportion of hydrogen dioxide is expressed, as is customary, in volumes of oxygen, determined by the standard method with potassium permanganate:

Brand.	Volumes of oxygen.	Barium salts.	Earthy salts other than barium.	Acidity expressed in milligrams of KHO required for 25 c.c. of sample,
O. C. (Oakland Chem. Co.)	15.6	None	None	3.8
Béné	11.8	*4	a	3.36
Lehn & Fink	10.5	**	16	4 08
Marchand (1st sample) .	10.1	"	Present	34.08
" (2d sample)1 .	Not de-	-11	**	22 00
Powers & Weightman .	termined 9.02	"		23.04
Merck	12.09	61	Large	16.32
Mallinckrodt	9.14	**	amount Traces.	8.64
	1			The second of

¹ This sample was one that had been purchased for some laboratory experiments in bleaching, and, having been kept with-

ORIGINAL LECTURE.

ENDOMETRITIS: UTERINE DILATATION AND DRAINAGE.

A Clinical Lecture delivered at the Medico-Chirurgical Hospital, February 2, 1892.

BY E. E. MONTGOMERY, M.D.,

PROFESSOR OF OBSTETRICS AND GYNECOLOGY IN THE MEDICO-CHIRURGICAL COLLEGE; OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL; AND GYNECOLOGIST TO ST. JOSEPH'S HOSPITAL.

I PROPOSE to-day to consider the subject of dilatation of the uterus and the conditions that indicate it. We will first discuss the indications for dilatation and the advantages to be derived therefrom. In many cases the knowledge that we are able to obtain by means of conjoined manipulation and examination with the speculum, and in rare cases the introduction of the sound, will be insufficient to determine exactly the character and condition of the cavity of the organ. In such cases it may be necessary to examine still further to determine what is its condition and the lesions that give rise to certain symptoms that may be present. Such an exploration of the uterus will be indicated particularly when hemorrhage is a marked symptom. It is well to remember that hemorrhage may be due to a variety of causes: thus, for instance, to a diseased condition of the endometrium, which is known as hemorrhagic endometritis, in which the mucous membrane is swollen, its vessels distended, the surface abraded, the epithelium lost, and the capillaries so engorged and their walls thinned that they rupture easily. Not unfrequently we have papillary growths on the uterine mucous membrane, a condition such as I have shown you at different times during my clinical lectures, cases similar to the one on which we operated a week ago. These growths may extend from the uterus into the vagina, forming what is known as small granular, mucous, or vascular polypi; or they may be situated at any part of the uterine mucous membrane, and in some cases give rise to considerable hemorrhage.

Again, hemorrhage may be the result of inflammation in the structures about the uterus; thus, inflammation of the broad ligament on one side, in which extensive exudation occurs, may give rise to a passive congestion of the uterus and a resultant hemorrhage independent of any disease of the uterine mucous membrane, or in which such disease is secondary to that outside of the organ; in cases in which the ovaries have undergone what is known as cystic degeneration, hemorrhage is also a marked symptom. In such cases, notwithstanding everything that may be done in the way of local applications to the uterus itself, the patient will continue to bleed until the congestion is arrested by the removal of the offending organs.

Another source of hemorrhage, and one that should ever be kept in mind, is the result of degeneration of a malignant character of the uterine mucous membrane.

out any precautions to preserve its strength, the determination of the volume of O would have been of no value in indicating the original quality; but since the amount of free acid and earthy salts will not be affected by such treatment, they were determined. The volume strength claimed for the sample originally was less than that claimed for sample No. 1.

This, in the majority of cases, results from disease about the cervix, and, when so situated, is readily recognized by touch or examination through the speculum. There are cases, however, in which malignant disease of the uterus occurs, and the body is the seat of its development; this takes place in about 2 per cent, of the cases in which malignant disease is situated in the uterus. Again, hemorrhage may result from sarcoma situated either in the walls of the organ or in its mucous membrane. Probably the most frequent cause of uterine hemorrhage is the development of growths within the walls of the organ itself, which in their subsequent development are forced into the cavity. These growths are known as fibromata, or fibro-myomata. As such a growth develops and is situated near to the internal lining membrane, it is pushed into the cavity, taking with it a covering of the mucous membrane. The vessels in this mucous membrane become distended, their walls thinned, the epithelium lost, the papillæ become enlarged, points of ulceration are found, and hemorrhage of a serious character, often sufficient to endanger the life of the patient, may take place. In such cases, the hemorrhage is either an exaggeration of the menstrual flow, known as menorrhagia, or one that occurs indedently of it and known as metrorrhagia. The enumeration of these various conditions illustrates the importance of further examination in order to be able to determine exactly the cause of hemorrhage in an individual case.

The degree of dilatation will depend, of course, upon the purpose for which it is accomplished; if it is with a view of removal of the growths within the cavity of the organ, a greater dilatation will be required than simply for the exploration of the cavity for diagnostic purposes.

Independently of the indications for dilatation of the uterus for diagnostic purposes, the uterus is also dilated with a view to therapeutic effect—as when the uterus is flexed, or its canal is contracted as a result of congenital conditions, or from the existence of inflammatory trouble. Inflammatory conditions may be the sequelæ of either septic infection following parturition, or of long-continued catarrhal disease of the uterine mucous membrane. Again, dilatation may be said to be indicated in those cases in which endometritis has existed for a considerable length of time, has given rise to swelling of the mucous membrane of the outlet or cervical canal to such a degree that the drainage of the uterus is defective, and there is a constant tendency to regurgitation into the tubes, thus developing tubal trouble. Indeed, in the treatment of inflammatory diseases of the uterus, the first and prime consideration should be to secure thorough and efficient drainage. We need but to investigate the history of long-continued inflammation of the uterus to recognize the close association of tubal and ovarian disease.

The patient I bring before you to-day is a woman who is suffering from a disease that has been in existence for some length of time, and in whom I consider that the indication for dilatation of the uterus from a therapeutic standpoint is amply indicated. The woman has been married twelve years; she has one child, eight years of age; the menses are irregular, sometimes occurring every six weeks, and attended with pain in the abdomen and back, with headache, and followed by slight leucorrhea. She also suffers from constipation. Patients that

have an inflammation existing in the mucous membrane of the uterus have not only pain at menstruation, but the pain usually occurs during the entire period, and in some cases, particularly when the inflammation has extended beyond the uterus into the tubes, it is likely to be followed by pain of a spasmodic character. The condition is due to the muscular contraction of the Fallopian tubes, in their effort to force out and carry the secretion into the uterus. In this patient we have the uterus contracted; the mucous membrane of the neck is so swollen that the discharges cannot readily make their exit from the organ, and the patient has to go into labor in order to rid the uterus of them. The result is that these discharges will oftentimes make their exit more readily into the tubes than through the cervical canal, and the result is a dilatation of the uterine orifice of the tubes, oftentimes of the tubes themselves, increased intensity of the inflammatory condition, and largely increased secretion. When women have suffered for a considerable length of time from uterine disease, it is exceedingly common to find that there is a diseased condition of the tubes and of the ovaries. This disease is secondary; partly a result of the defective drainage from the uterus and regurgitation of the contents into these organs, and partly from reflex effect upon the circulation. Supposing such a patient, with the pelvic organs in a state of irritation, falls into the hands of a physician whose routine practice is by touch to ascertain the presence of the cervix, introduce the speculum, and through it the sound. The result will almost certainly be a carrying of the infection into a soil ready for its nurture and development, and the occurrence of an acute attack resulting in tubal and ovarian trouble so serious as possibly to threaten the life of the patient. So frequently has this been the case, that some physicians have been led to condemn all local treatment as injurious and detrimental; have been led to deride and condemn any treatment directed to the inflamed surfaces of the uterine tract. The difficulty is not that a plan of treatment has been pursued, but that an improper one has been exercised. It is just as important to religiously adopt aseptic measures in the treatment of the uterine mucous membrane as it would be in the practice of abdominal surgery. Those who have condemned plans of treatment directed to the uterus, have rendered a service in directing attention to the danger resulting therefrom, and awakening in the minds of the profession the importance of most careful and proper procedures in treating such difficulties.

Instead of the presence of the conditions described contra-indicating uterine treatment, however, they should be considered as urgently demanding the appropriate measures, in order to prevent more serious trouble. Even though there may be ovarian or tubal trouble, by proper and judicious measures we may be able to arrest its further progress, and save the patient from the necessity of a sacrificial operation. Within the last two years I have operated upon a number of patients upon whom sacrificial operations had been advised, and have been successful in restoring them to health without the loss of their organs.

You remember, this patient gave a history of having had a child eight years ago, and we find that there is in her case some indication of tubal disease, as presented by tenderness, by some thickening of the tube, the result possibly of distention and of peri-salpingitis. I propose to operate upon her to-day with a view of overcoming this condition and possibty saving her from a sacrificial procedure. As a preliminary to this, we have had the alimentary canal thoroughly evacuated, the vagina has been irrigated with antiseptic solutions twice daily, and once every hour for the last three hours-this with a view of disinfecting, as thoroughly as possible, the vaginal tract, and particularly the discharges that take place from the uterus. It is important to remember, however, that irrigation alone will not entirely remove the débris, so that the vagina should be thoroughly swabbed or brushed with a disinfectant solution such as acid sublimate, or the peroxide of hydrogen, before the speculum is introduced and the operation begun.

The instruments have been as carefully prepared as if for an abdominal operation; the care and precaution in this direction really constitute the secret of success in all operations of this character.

With the patient under the influence of an anesthetic. before proceeding to the operation. I examine carefully about the uterus to determine whether the inflammation is too extensive to permit us to proceed safely with the plan we have in view. Finding the uterus to be movable -that, notwithstanding the thickening and enlargement of the tubes, they are not bound down-we shall proceed as intended. My object in examining carefully in this matter is, that we may not run the risk of having our patient infected from accumulations that are already within the cavity of the uterus, as in tubes distended with pus or other infectious material. The operation is performed as follows: We introduce a Goodell speculum for the reason that it may be made to dilate laterally or antero-posteriorly, and its blades are less in the way. The cervix is grasped with the volsella forceps and drawn upon sufficiently to straighten its canal, and the dilatation is begun by the use of graduated bougies. These instruments are so arranged that there is a bougie upon either end; the circumference of each bougie about two centimeters greater than the one preceding. It is astonishing how rapidly and safely, with instruments of this character, the cervical canal can be dilated, from an opening through which a very small instrument can be passed to one sufficiently large to permit the introduction of the finger. I prefer the bougies to the ordinary parallel dilators, for the reason that the pressure is made upon all parts of the uterus equally, and there is less likelihood of tearing. Then, too, in the bilateral dilatation, the pressure is made entirely upon the sides of the uterus, which gives rise to severe bruising and subsequent danger of a slight slough that may lead to the infection of the cavity of the uterus. After the dilatation of the organ and introducing the blunt curette, we find that the cavity of the uterus is quite roomy and large, showing evidence of its dilatation by retained secretion. The curette is passed over the mucous membrane upon all sides, with a view of dragging off any granulations, pressing out of the glands their secretion, breaking small cysts that may be present, and in this way changing an unhealthy into a healthy inflammation. Recently in a case in which the hemorrhage was quite marked, and we supposed there was a possibility of malignant disease, the dilatation and the use of the curette following resulted in the dragging off of a polypus the size of a hazel-nut, and the relief of the patient from the condition that had given rise to her discomfort. We go over the mucous membrane here with the curette, but find nothing more than the evidence of some granulations and the increased bleeding. This patient has been twice advised that an abdominal operation would be necessary, with a view to the removal of the ovaries and tubes. While it is possible that the plan of treatment we are now instituting may not be entirely successful, and that such an operative procedure might yet be necessary, it is still important that the patient should have the opportunity to escape, if possible, from a sacrificial operation.

After the curetting, we wash out the cavity of the uterus with either acid sublimate, or, what I like better. the peroxide of hydrogen. This may be done either by the use of the double catheter or by taking a swab of cotton, dipping it in the solution, and in this way mopping out the cavity of the organ. If there is reason to suppose that considerable infectious material is within the cavity of the uterus, the irrigation will by all means be the most desirable method to pursue. As we were satisfied that in this patient the condition resulted from defective drainage, we will supplement the dilatation, curetting, and irrigation of the uterus by the introduction of the drain through which the discharges of the organ may be able to make their exit. For this purpose I use a drain recommended by Wylie, of New York; it consists, as you see, of a hard-rubber plug with a groove on its side. What I like still better, is the one recommended by Boldt, in which there are three grooves. With this placed in the cavity of the uterus, we feel perfectly certain that there will be no reason for the locking up within the organ of the discharge, Having carefully wiped out the vagina, we introduce an iodoform-gauze tampon to hold the instrument in place. This gauze is rapidly saturated with the discharges, and does not consequently obstruct their exit from the uterus. It will be permitted to remain there for forty-eight hours, and after its removal the uterine cavity will be irrigated twice daily with a disinfectant solution.

Dilatation of the uterus is not by any means a new method of procedure. It has long been recognized as a necessary plan of treatment in many cases, though the methods of its accomplishment were formerly quite different. The usual method recommended is the introduction of either a sponge, laminaria, or tupelo tent, permitting this by the absorption of the discharges to increase in size and thus dilate the uterus.

Although the sponge may be saturated with carbolic acid, or precautions taken at the time it is introduced to render it antiseptic by the use of salicylic acid, it is still an objectionable method of procedure. The sponge rapidly absorbs the discharge from the uterus and very quickly decomposes, and at the same time the rough sponge irritates the mucous membrane and offers the most favorable soil for the development and absorption of septic material. When this method of dilatation was a frequent one, I have seen numbers of cases in which there had been an extensive inflammation in the uterus, extending to the tubes, and even resulting in the death of the patient. Consequently, I do not only not recommend the use of the sponge tent as a means of

dilatation, but would earnestly condemn it as being far too dangerous for ordinary practice. The laminaria and tupelo tents are less objectionable than the sponge, but they are slower methods of dilatation of the uterus, and consequently, from inability to keep the parts continuously disinfected, are also attended with danger. The use of the sponge tent in increasing the amount of serous discharge from the surface of the uterus, was found very beneficial in reducing the size of the organ. In this way the therapeutic influence of the tent was certainly worthy of consideration, but this result of the treatment can be accomplished by other and less dangerous means.

Dr. Vulliet, before the International Medical Congress in Washington, in 1887, read a paper on a plan of treatment which consisted in tamponing the uterus with antiseptic gauze, preferably iodoform, and repeating this until the uterus was thoroughly dilated; by this plan of procedure he was able not only to dilate the uterus, but also to dilate it so efficiently that the cavity of the entire organ could be inspected. The method consists in packing in the cervical canal iodoform-gauze, which, by capillary action, serves as a vent for the discharges within the uterus. It leads to dilatation of the cervix, to retraction of the uterus, and in this way the organ is rapidly dilated. It is a plan that is slow in action, but the drainage of the uterus with it is perfect, and the increased serous secretions and activity in the uterine walls lead to rapid completion of the process of involution in subinvoluted uteri. If the dilatation is not sufficiently complete by the first introduction of gauze, the cavity of the organ can again be rendered aseptic and a new application of gauze made, in this way enabling the most thorough examination to be made of the cavity of the organ, and in some cases having of itself a marked beneficial effect on the size and condition of the uterus.

A number of years ago a plan of treatment was introduced by Simpson, and extensively followed in this country by Sims, that consisted in bilateral incision of the cervix. In this way the opening was enlarged; patients who had formerly suffered from dysmenorrhea were in the majority of cases relieved, and it not unfrequently had a beneficial effect upon sterility. Sims's plan was to plug up the cavity of the uterus with cotton. sometimes saturated with a styptic with a view of arresting hemorrhage and preventing the reunion of the divided surfaces. This plan of treatment, however, interfered with drainage and in some cases was attended with and followed by the development of septic trouble. The observation of this work led Dr. Wylie to introduce the drainage-tube, an instrument that serves not only to drain the organ, but by its presence stimulates muscular contraction of the uterus with a view to secure its expulsion, and the activity of the circulation thus engendered brings about a reduction of its size.

By the plan of treatment that we have thus pursued in this patient, more is accomplished in the treatment of endometritis than was formerly obtained by months of local treatment. I would recommend this plan in every case of inflammation of the uterine mucous membrane, as by the rest in bed, the increased secretion, and change of surroundings the condition of the patient is rapidly improved. This plan of dilatation and curetting of the uterus is one that is particularly applicable to those cases

of septic inflammation following parturition. I have several times been called upon to treat a patient suffering from such trouble and have urged the importance of prompt dilatation and curetting of the organ, thus removing débris that affords a source for putrefactive changes and absorption of the ptomaines or products.

In every such case, treatment should be prompt, with a view to limit the extension of the disease to the uterus. If it has extended into the tubes, there is danger of the development of purulent salpingitis, and the formation of large pus-collections. Such cases are ordinarily treated by vaginal, or even intra-uterine irrigation, and with a large accumulation of débris, the germs multiply beneath this, are not reached or affected by the irrigation, or only to a limited degree, and the products are absorbed, giving rise to marked elevation of temperature.

In curetting, the finger is by far the safest and most judicious instrument, as by it the thickness of the uterine walls, their consistency, and the amount of force required to bring about the separation, and the parts affected are more rapidly determined. The curetting should be followed by irrigation with an antiseptic solution. A very good plan is to use, first, the acid sublimate solution, I to 2000, then sterilized water, and finally peroxide of hydrogen, following this again by sterilized water. As the surfaces of the uterus are large and flabby, likely to fall against each other and interfere with the subsequent drainage of the accumulations from the organ, the preferable plan of procedure is to introduce a gauze tampon, consisting of a twist of iodoform gauze, to the fundus of the uterus, letting this be sufficiently large to fill up the canal. By its presence this acts as a drain, keeps the surfaces separated, promotes capillary action and secretion, and, as a foreign body, causes contraction of the uterus. The process of reduction in the size of the organ is very rapidly accomplished by this means, and if the temperature has before been high, it will be found to fall nearly, or quite, to normal.

CLINICAL MEMORANDA.

FRACTURED CLAVICLE: A NEW DRESSING.

BY EDWARD S. STEVENS, M.D.,

THAT very common seat of fracture, the clavicle, has furnished the text for many a paper, and the dressings for fractured clavicle are almost without number, yet there is still something to be learned in the way of the proper treatment of this form of injury.

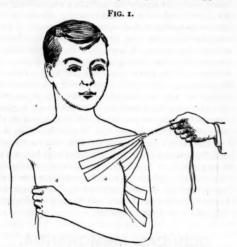
In considering the deformity that is usually present in fractured clavicle, surgeons have generally limited their observations to the immediate seat of the fracture and the muscles acting directly upon the fragments. The more rational method would appear to be that looking to the displacement of the shoulder for the cause of the lapping of the fragments. The weight of the shoulder, and the action of the pectoral muscles and the latissimus dorsi have been given as the forces contributing to drag the shoulder downward, forward, and inward. Another factor in the production of this displacement, which I do not remember to have seen mentioned elsewhere, is the action of the serratus mag-

nus. This muscle, acting from the sides of the chestwall upon the vertebral border of the scapula, will by itself produce the displacement of the shoulder which is to be counteracted in treatment. This view of the injury presents the clavicle as a brace to the shoulder.

The usual plans of treatment have employed a sling for the elbow, a wedge for the axilla, and a retaining bandage, and there have been many modifications of this plan. The method I have to offer is the employment of direct extension and counter-extension.

The late Dr. I. L. Drake, of Lebanon, Ohio, had, for many years, made fractured clavicle a special object of study. The dressing I describe is the result of his earnest work, though I believe he never made use, in a case of fracture, of the dressing to which he had given so much study. The case I report is the only one in which it has been tried.

The extension apparatus consists of six strips of adhesive plaster, each about one yard long and two inches wide, and a cord. The strips of plaster are applied in



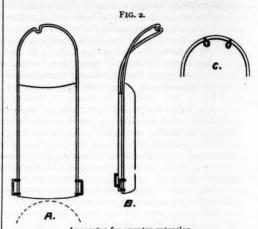
The extension apparatus,

the following manner: The first is applied directly under the clavicle along its whole length. At the acromio-clavicular articulation the plaster is cut sufficiently from each edge to permit a fold of the adhesive side to be turned upon itself until covered. The strip is then continued spirally around the arm to the elbow. The second and third strips are applied similarly but lower down over the pectoralis major.

The other three are arranged over the back in a similar manner and are wound around the arm in front. The cord is then tied to the strips of plaster where they are folded over the acromio-clavicular articulation,

The apparatus for counter-extension consists of a metallic plate, five or six inches wide and about eight inches long, concave from side to side, so that it will fit the side of the chest; from one end of it a stiff wire is bowed from one side to the other and bent out so that when the plate is fitted to the side the wire, which has been slipped over the arm, will be above and beyond the shoulder. An indentation is made in the wire bow a little back of its central point.

This gives us a fixed point above, behind, and without the line of the clavicle and supports the broken brace to the shoulder. The indentation prevents the cord, which is tied to it, from slipping. To the lower



Apparatus for counter-extension.

A. B. Plate as seen from the front and side. C. Author's modification of the bow.

extremity of the plate there is soldered on each side a wire loop.

The extension-apparatus being applied, the apparatus for counter-extension is arranged and applied as follows: A wide strip of plaster is fastened to the concave side of the plate, the strip being long enough to pass



Dressing as applied.

under the elbow and up the outer side of the arm. The plate may then have a light pad of some soft stuff applied to each side. The wire is slipped over the arm to the shoulder; a band is passed over the uninjured shoulder, through the wire loops at the lower end of the plate, and securely fastened; and the plate is bound to the chest by a roller bandage.

Being assured that the fracture is reduced, the cord is firmly tied to the indentation in the wire bow, the arm is placed at the side, and the strip of plaster carried from the plate to the arm. The forearm being permitted to rest in a sling, the dressing is completed.

The foregoing corresponds very closely with the dressing as originally designed by Dr. Drake. In my use of it I did not employ the strip of plaster extending under the elbow between the plate and the arm. Indeed, I believe that if it was thought necessary to keep the arm immovable a roller bandage would answer a better purpose than the strip of plaster. In another case, if I found it best to have a new plate made, I should modify it in this way: Let the bow be made plain, without indentation. At about three-quarters of an inch, or an inch, on each side of the middle let a small ring be fastened to the under side of the bow (Fig. 2, C). This will permit of the apparatus being used on either side of the body. As originally designed, it can be used on one side only.

I believe that this dressing could be used with advantage in certain cases of dislocation of the sternal extremity of the clavicle, in which, if one can accomplish reduction, it is ordinarily difficult to maintain it.

The following case demonstrated the practicability of this form of dressing.

Sunday morning, July 26, 1891, Mr. H., aged about sixty-three, in crossing a lot, fell, bruising his arm and the right side. Believing the injury to be simply a bruise, the family made local applications and did not call me in until the next day. I found the right side of the chest and right arm very much discolored, and there was so much swelling over the clavicle and upper ribs that it was difficult at first to tell whether there was a fracture or not. There was the characteristic posture, however, and pressure over the inner portion of the middle third of the clavicle, where there was the most swelling, elicited crepitus. I applied the dressing described, leaving the arm free and the forearm in a sling. Immediately he expressed himself as being more comfortable. Owing to the great swelling, I could not be sure that the fracture was perfectly reduced, and for this reason the case is not entirely satisfactory to me. In the course of a week or ten days the swelling had almost disappeared and showed as little deformity as is usually seen with the old dressings. Indeed, the patient and his wife could see no difference between the two sides, although there was a distinct, though slight, angle at the situation where crepitus has been found. During the nearly three weeks in which he wore this dressing, the only attention needed was on two or three occasions to readjust the bandage that bound the plate to his side, and to tighten the cord at the indentation in the wire bow. Each time the cord was tightened he spoke of feeling more comfortable. The patient removed the dressing himself on the eighteenth day, although I had intended leaving it on for a week longer.

THREE SHOULDER-JOINT AMPUTATIONS.

BY GEORGE S. BROWN, M.D., OF BIRMINGHAM, ALA.

CASE I.—Henry W., colored, fourteen years of age, was a driver of a coal-hopper at the Sloss Coke Ovens.

The hopper is a large iron vessel on a small flat car of four wheels, weighing 1500 or 2000 pounds. On January 12, 1890, the boy went to sleep on the track in front of the hopper and the mule pulled it over him, producing the following injuries: The arm was crushed through the surgical neck of the humerus; the acromion process of the scapula was broken off and hanging in the wound; there was fracture of the second and third ribs; an abrasion, half an inch in width, apparently made by the wheelflange, almost encircled the neck. There was double internal strabismus, which his friends said he did not have before, and hemorrhage from both ears, with profound unconsciousness. No meningeal fluid was seen in the discharge from the ears. The crushed bone and tissues were trimmed from the wound, the axillary artery tied, and the wound dressed. There was no flap to cover it. There was not enough tissue of any kind to cover the glenoid cavity, which occupied the center of the wound. On the third day the boy recovered consciousness, and though from then on he was perfectly rational, he was constantly cross and irritable, and complained of headpains for about three weeks. On the seventh day an abscess was evacuated two inches anterior to the stump over the site of the fractured ribs. After this the temperature, which had ranged from 101° to 103°, went to normal, and did not rise again. The abscess-cavity was washed out with hydrogen peroxide, and a few minutes afterward, in a fit of coughing, he expectorated what seemed to be the effervescing peroxide; but the washing was repeated daily and he did not again show any evidence of lung-complications. The amputation-wound healed rapidly by granulation, and, what was noticed with interest, independent granulations began exactly in the center of the glenoid cavity, and, when first noticed, were only the size of a pin's head. This point spread to meet the granulations from the borders of the wound and rolled over the edge of the cavity until it was filled to a level. This point of granulation was evidently an accidental epithelial graft which hung there from the washing. I again saw my patient in January, 1892, two years after the accident. The double squint persists unchanged: otherwise he is in good health.

CASE II.—J. W. B., white, twenty-one years of age, brakesman, was run over by a freight car January 23, 1890, and the right arm was crushed off two inches from the joint. The axillary artery was tied, the mangled tissues trimmed out, and the drainage-tube used was removed on the second day. The stump completely healed without suppuration in twelve days.

Case III.—H. W., white, twenty-eight years of age, a telegraph operator, was run over by a freight train at 2 A.M., January 16, 1891. The right arm was crushed off three inches from the shoulder-joint. Disarticulation was performed, the artery tied, the flaps approximated, a drainage-tube inserted, and the wound sutured with large-sized catgut. On the sixth day a little rise of temperature had been observed for a day or two; so the dressings were removed; the drainage-tube having been removed on the second day. The line of union was perfect, except at each extremity where the drainage-tube had been; this was suppurating, and every stitch-hole was a suppurating sinus. Water injected into either angle of the wound spurted through the stitch-holes, but did not appear anywhere in the line of incision. The stitch-

holes that were not deep enough to communicate with the track of the drainage-tube were suppurating independently. A few days later a deep abscess over the ligated artery was opened, and two days after this the catgut knot, which had held the axillary artery, came away in the washing. The line of incision of the stump was perfectly healed and the whole trouble was clearly traced to the commercial carbolized catgut, the soaking in alcohol that it had undergone during the time of the operation not having improved it. The healing was complete in three weeks and the result perfect.

In all three of these cases, as the first step in operation, the bruised and twisted axillary arteries were found in the wound, traced up and tied above the clot, which in each case was a full inch from the torn extremity.

MEDICAL PROGRESS.

Two Cases of Thomsen's Disease .- DELPRAT (Deutsche medicin. Wochenschr., 1892, No. 8, p. 158) has recorded two interesting cases of Thomsen's disease, or myotonia congenita, in two brothers in a family in many members of which abnormal muscular contraction seemed to be a common feature. One of the patients was nineteen and the other fourteen years old. In both, attempts at muscular movement were attended with stiffness and spasm, which gradually grew less and disappeared as the movement was accomplished and repeated. Muscular development was excessive. There was some shortening of the flexor muscles of the hands, so that perfect extension was impossible. Muscular mechanical irritability was but little increased; irritation, however, was followed by contraction that persisted for some time. The small muscles of the hand contracted in toto; the long muscles presented elevations and depressions at the site of percussion, which gradually disappeared. The knee-jerks were preserved; ankle-clonus was wanting. There was no ataxia. Fibrillary contractions were not observed. The action of the sphincters was not deranged. Sensation was preserved. The reactions of muscle and nerve to faradism and voltaism were at first tardy, but on repeated stimulation or after voluntary movement the responses were ready and active. Tetanic contraction was readily induced. In the first case rhythmical wavy contractions, passing from the kathode to the anode, followed voltaic stimulation of some of the muscles,

Death in an Infant from Laryngeal Obstruction by Vomited Milk-curd.—Demme (Bericht des Jenner'schen Kindersp., Berne, 1891) has reported the sudden death of a dyspeptic child, ten months old, without recognizable cause, in which at the autopsy the esophagus and entrance to the larynx were found occluded by a coagulum of cows' milk ejected from the stomach by vomiting and causing asphyxia.—Centralbl. für die gesammte Therap., x, 3, p. 171.

Orchitis following Influenza.—BRISCOE (Lancet, No. 3569, p. 192) reports the case of a laborer, thirty-two years old, in which, after an attack thought to have been influenza, orchitis developed, without other complication.

THERAPEUTIC NOTES.

Puncture for the Relief of Anasarca. — GERHARDT (Deutsche medicin. Wochenschr., No. 7, 1892, p. 138) proposes to obviate the wound-infection that so often follows the various modes of puncture for the relief of obstinate and intense anasarca by the observance of rigid surgical asepsis and antisepsis. The extremities are cleansed with soap and water and douched with sublimate solution. With a knife, sterilized in carbolic acid solution or in a hot 2 per cent. soda solution, from four to eight punctures are made through the skin. The limb is then wrapped in antiseptic gauze and cotton, and the dressing is carefully renewed as soon as it becomes saturated.

Inunctions of Iodoform in Pulmonary Tuberculosis.—The following are two forms in which FLICK employs iodoform by inunction in the treatment of pulmonary tuberculosis:

3j.
gt. j.
3j. "
₹ij.—M.
3j.
gt. j.
3j.
ξiij.—Μ.

Asafetida for Habitual Abortion.—In support of the utility of asafetida in the prevention of habitually repeated abortion not dependent upon a recognizable cause, such as syphilis, tuberculosis, disease of the uterus or its appendages, Turazzi (Centralbi. für Gynäkol., 1892, No. 9, p. 164) has collected forty-one cases from various sources, in thirty-seven of which the use of the remedy was followed by normal labor. Three grains of the gum-resin are given daily from the beginning of pregnancy, the quantity being gradually increased to fifteen grains, with a subsequent gradual diminution in the dose.

Sodium Ethylate in Dermatologic Practice.—Sodium ethylate may be obtained by boiling sodium with alcohol at 122°. Inunctions of the agent (2 parts to 100 of olive oil) have been found useful in psoriasis. Applications of a 10 per cent. aqueous solution in cases of lupus, following curetting, have been followed by permanent improvement.—La Méd. Mod., 1892, No. 9.

For Pruritus Ani,-An ointment containing-

Crease	ote or	carl	oolic :	acid'	1	dram.
Lard					2	ounces
Camp	hor				1	dram.

Applied topically, is a safe and often effectual remedy for the relief of pruritus ani.

WHITLA.

Deodorized Chloroform.—The ethereal oil of corianderseed is recommended as a deodorant for iodoform. Two drops of oil are thoroughly mixed with each fifteen grains of iodoform.—Deutsche med. Wochenschr., 1892, No. 7.

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SATURDAY, APRIL 9, 1892.

AKROMEGALIA AND ALLIED CONDITIONS.

In bringing together the essays of MARIE and SOUZA-LEITE upon akromegalia, together with the bibliography of the subject, and an appendix of cases by other authors, the New Sydenham Society has conferred an important benefit upon English medical literature.

It must be conceded by all that physiologists are far from understanding the complex and varied relations existing between the nervous system and nutrition; while the influence that disease of one organ may exert upon the nutrition of distant and apparently unrelated organs, from failure of proper metabolism, with deprivation of necessary anabolins, or from perversion of metabolism giving rise to the production of poisonous katabolins, is almost an unsurveyed field.

By the careful study of unusual cases, by recording the facts, even without attempts at explanation, all clinicians have it in their power to advance our knowledge of this subject. All cannot be Newtons, to discover by a sudden flash of genius, illuminating previous careful and long-continued study, the great generalization that shall explain the multitude of data; but all can help to accumulate the jots and tittles that a future Newton may combine into a word of light.

MARIE is entitled to lasting gratitude for the keen observation and patient industry by which he has erected into a separate group of diseases the trophic lesions of the extremities. There can be little doubt that these cases have been seen from time to time by others, less keen-sighted than MARIE and the observers whose cases he has quoted, and have been diagnosticated, perhaps, as chronic rheumatism, or rheumatoid arthritis; or, perhaps, not diagnosticated at all.

It is a common mistake of inexperienced men to see a new disease in every case that differs from the type of a special disease as laid down in the books; but it is no less a mistake on the part of experienced men to force into the Procrustean bed of established nosologic classes every case that comes under their observation.

CHARCOT, PAGET, MARIE, MORVAN, and others, who have studied the trophic lesions of the extremities, have given us a number of new classes, and doubtless we shall make the same error of forcing too many cases into these classes, as we had done with the cases properly belonging to them, before the industry of the observers cited had given us the new names.

As now established, it seems justifiable to apply the name of akromegalia, or enlargement of the extremities, to cases presenting thickening and elongation of the bony structures, especially of those of the hands, feet, and face, associated with overgrowth of the related soft parts, with kyphosis, with a number of more or less constant disturbances of sensation, general and special, with polyuria (sometimes albuminuria or glycosuria), and almost constantly with alteration of the thyroid gland. There is a peculiar shape of the face, which serves to discriminate this disease from the disease described by SIR JAMES PAGET under the name of osteitis deformans, and from that described by VIRCHOW under the name of leontiasis ossea, as well as from myxedema, to which it bears some superficial resemblance.

In myxedema the face is round—"moon-shaped"; in akromegalia the facial outline is an elongated, irregular oval. In osteitis deformans, the increase in the size of the head is produced by overgrowth of the bones of the cranium rather than of those of the face, giving an outline somewhat resembling that of a triangle, with the base above, in contradistinction from the lengthened ellipse, almost equal in transverse diameters above and below, of

akromegalia. In PAGET'S disease, moreover, it is the long bones that are chiefly affected, the hypertrophy rarely attacking the hands or feet, or, if so, only to a slight extent. There is likewise a tendency to deformity of the bones, manifested by an outward and forward curving of the tibias and femurs, more rarely of the humeri and the bones of the forearm. This is not seen in akromegalia.

In a certain number of SIR JAMES PAGET'S cases the patients became shorter from this curving of the bones of the leg. In akromegalia, on the contrary, there is more often an increase in the height.

The condition to which the name of "pulmonary hypertrophic osteo-arthropathy" has been given is likewise to be differentiated from akromegalia. It is a condition of deformity and distortion of the fingers, toes, and spinal column, in association with pulmonary or pleural disease. The principal deformity of the digits is a thickening and elongation of the terminal phalanx, with that peculiar parrotbeak-like curvature of the nail to which the term "Hippocratic finger" has long been applied. The nails are longitudinally striated, and exhibit a tendency to split longitudinally. Practically, the condition seems to be an exaggeration of the clubbing of the fingers and disturbance of the nutrition of the nail, long recognized as a frequent accompaniment of empyema and of pulmonary tuberculosis. In akromegalia the deformity affects all of the phalanges, the hand becoming spade-like, and the soft tissues with the bones enlarging laterally, rather than longitudinally. The nail is short and broad, and does not reach to the end of the finger. The kyphosis in akromegalia is rather cervico-dorsal; in pulmonary osteo-arthropathy it is rather dorso-lumbar.

In pulmonary osteo-arthropathy, while there is sometimes a slight projection of the lower jaw, the upper lip is not thickened, the prognathism is less marked than in akromegalia, and the countenance, as a whole, appears to be smaller rather than larger than usual; the nose is sharpened rather than enlarged and flattened, and the facial outline more nearly resembles that of PAGET's disease than that of akromegalia. In pulmonary osteo-arthropathy, moreover, there is a slight degree of epiphyseal enlargement of the bones of the forearm, and often enlargement of the bones of the leg, both of which conditions are unusual in akromegalia.

The condition called akromikria (STEMBO: St. | Petersburger med. Wochenschrift, xvi, Nos. 45 and

46, 1891) presents many points of contrast with those just described. There is a diminution in the size of the extremities, of the nose and of the chin. The case described by STEMBO presented features somewhat resembling the condition termed by the French sclerodactylia. The morbid processes began in the terminal phalanges of the fingers, near the root of the nail, and were, in brief, cyanotic discoloration, bulke, and ulceration, resulting in cicatrization, with loss of finger-substance and of the nails. Microscopic examination of the remains of the nails disclosed the presence of the achorion Schönleinii. The condition differs from Morvan's disease in everything but the paronychia and its results.

Similar, but not identical, conditions have been observed in cases of tuberculosis. In this connection reference may be made to recent observations upon the connection of rheumatoid arthritis with suppurative foci in the body, to the series of cases of distortion and atrophy of the fingers reported as of "affinity to RAYNAUD'S disease," by WARDROP GRIFFITH (Medical Chronicle, November, 1891), to the arthropathies of spinal disease, and to the muscular atrophy associated with joint-disease. The conditions must have a more or less intimate relation, and that relation is to be found either in the trophic nervous system, in the metabolic cycle, or in both.

To go a step further, cretinism, myxedema, exophthalmic goiter, and rheumatism are not entirely unrelated with one another and with akromegalia and the conditions resembling it. The whole subject offers an attractive field for clinical and pathologic research, and especially for research in that line which is destined to be productive of the most brilliant results in the pathology of the future, namely, pathologic chemistry. B. W. RICH-ARDSON has long taught that in "perverted zymosis" will be found the explanation of the "synthesis of disease." He has pointed the way, but it has not yet been more than opened to the explorer. Bacteriology has absorbed too much of the energies of medical observers, but perhaps the stimulus that it has given to the institution and organization of laboratories, and the fact that it has now reached a point where chemistry must be invoked to explain the pathogenetic action of bacteria, and the continuing results thereof, will prove of great advantage in furthering the important line of research that still awaits its Koch.

HYDROGEN PEROXIDE AND THE "CHICAGO TRIBUNE."

Physicians have learned to expect from the secular press, wise and weighty comments on medical matters; but rarely do they find in the columns of a newspaper, comments so wise or so weighty as those quoted from the *Chicago Tribune* by the *Evening Telegraph* of Philadelphia, on that day long sacred to such wisdom, the First of April.

We allude to the affair as an illustration of the existing widespread and deep-seated cantankerous grudge against scientific medicine on the part of a large portion of the public, the combination of ignorance, impudence, and suspicion always popping up in the newspapers, and even in the best magazines and reviews, itself one of the products of the power of modern quackery in literary and social life.

The learned editor of the great Chicagoan daily does not pretend to have made a new discovery when he states that "the doctors are still groping blindly." The quacks whose advertisements so largely support many newspapers, proclaimed this long ago, in much more picturesque phaseology. It is gratifying to learn that "a few of their (the doctors') number are becoming alive to the truth of the matter;" and although this gratification is for the moment dampened by the information that "the schools still fight shy of it, and their older graduates are averse to investigation in a direction where loss of caste looms up in the distance as a reward for any who may commit themselves to a novelty in theory or practice," joy returns with the confident prediction that "the professional vis inertia, cannot, however, avail much longer. Opposition must give way before the pressure of public opinion in favor of rational treatment."

Now comes, however, the announcement of a great discovery of which the sole honor does belong to the learned editor of the Chicagoan newspaper; for surely no pathologist, no botanist, no bacteriologist known to fame has yet taught what this supreme scientific authority of the boundless prairies asserts "there is now no room to doubt"—namely, that the "bacterial causes of disease are mostly composed of albumin eliminated from the tissues of the larger organisms on which they feed."

In the light of this discovery, of course, "The next step is an easy one. If some material can be found that will coagulate these albuminous forms, thus killing them off without destruction of the tissues that have supported them, the problem will have been solved for more than half the diseases that flesh is heir to." Just so!

An ordinary editor would have been content with one such epoch-making discovery; even an extraordinary editor might have considered one revelation so stupendous as this, material sufficient for one editorial; but the genius who presides over the destinies of the great educational sheet of the Windy City, is not an ordinary editor, or even an ordinary extraordinary editor. In the very next sentence he piles Pelion on Ossa, and tells us:

"Such a remedy has been found in the so-called peroxide of hydrogen, or oxygenated water. It can be, and is, produced about as cheaply as soda water, and is a veritable microbe killer, both internally and externally. In the latter respect it is already being used in some of the hospitals and by a few medical men in their private practice. They find it invaluable as a cleanser of wounds, ulcerations, etc., not only destroying the bacterial forms that produce inflammation, but seeming to exert a really renovating action on the tissues, and especially in gradually, though rapidly, stopping the formation of pus. This success may be interpreted as indicating at least a possibility that the oxygenated water can be used with splendid effect in cases of kidney trouble, liver complaint, dyspepsia, diarrhea, rheumatism, etc."

Not to be too ungrateful to the source of his information, the editor graciously remarks that:

"Of course, the best mode of using the remedy in these and other diseases must be indicated by the more intelligent and progressive members of the medical profession. If too strong, it would act injuriously on the tissues of the human frame as well as on the bacteria that infest it; but if it can be thus controlled there is no good reason why the remedy should not be hailed as the long-sought specific which will rid the human race of its deadly burrowing pests, and give man a chance to live out the natural term—which is indicated, by comparisons of growth with longevity for other animals, to be not far from one hundred and twenty years."

A political organ may be successfully conducted by one who believes in spontaneous generation, and is unfamiliar with the researches of Tyndall, Pas-Teur, Cohn, Koch, Vaughn, Prudden, and their co-laborers—none of whom has yet "lost caste" by his contributions to science. Excellent leaders on the tariff may be written by one who thinks that

hydrogen peroxide was invented by some Chicagoan quack the day before yesterday, and is unaware that this most useful agent was introduced into medical practice in 1858, its beneficial powers fully recognized and its practical limitations accurately pointed out, by BENJAMIN WARD RICHARDSON, "the HUM-BOLDT of Medicine," than whom none is more highly or more deservedly honored by "the schools" and by educated physicians the world over. The British lion's tail may be vigorously twisted, and salt sprinkled most gracefully on that of the German eagle, by one whose knowledge of chemistry recognizes no difference between H₀O₀ and "oxygenated water"; whose attainments in physiology warrant the opinion that so unstable a compound undergoes no change in the stomach or the blood; and whose extensive acquirements in pathology enable him to identify the conditions present on a suppurating mucous surface with the profound structural alterations of varied visceral lesions. But when one thus learned in biology and experienced in therapeutics writes a supposably serious article on the causes, prevention, and treatment of disease, it is extremely likely that the product of his lucubrations will be just so wise and just so weighty as the editorial of the Chicago Tribune, appropriately quoted by the Evening Telegraph on April 1st.

MEDICAL NIHILISM IN OHIO.

A MEDICAL practice bill, described as "a moderate one," that had been formulated under the combined advice of the physicians, the homeopaths, and the eclectics, of Ohio, was lately defeated by the Ohio Legislature-the whole matter being treated as a "screaming farce" by these worthy examples of American nineteenth century politics. In Europe, and, as we have seen, even in Chicago, it has been shown that a half-dozen half-insane cranks can endanger the whole structure of civilized society and bring social life to the point of barbarism. In Ohio, then, we have an example of the same fact in a medical way. Following the Cincinnati Lancet-Clinic, let us name these Nihilist cranklegislators of Ohio: PRICE, of Hocking County; DOTY, of Cleveland; JAMES, of Wood County; ELY, of Fulton County; BAIRD, of Ashland. Of course, the newspapers were generally on the side of the "physio-medicals," the patent-medicine men, the drug-stores, and a horde of nondescript quacks, who combined to laugh down the bill

through their representatives here named. Let us specialize as guilty of this infamy, besides the hounds' chorus of the county newspapers, the Cincinnati Commercial Gazette, the Columbus State Journal, and the Toledo Blade. These should be well remembered. On the other hand, the Cincinnati Enquirer, the Cleveland Leader, and the Cincinnati Times-Star are mentioned as in favor of the bill.

What a revelation of the depths of ignominy and ignorance this fact discloses! The only consolation that can be gotten out of it is that lower depth can hardly be reached, and we may hope that the inevitable progress upward may at last be begun.

And this consolation also: the folly of compromise and the shame of it! After the disgrace of combining with the homeopathic and eclectic quacks in the desperate game, and then to be beaten! The only compromise with certainty of immediate success is that single one still left—to clasp hands with all the patent-medicine syndicates and the humbugs and deviltries that sail under our benign-malign laws, and as a body of physicians without a spark of honor, suicide in the open legislative market. Better to have been defeated with honor than thus besmirched with the shame of an ignoble and useless compromise.

CORRESPONDENCE.

THE VALUE OF TUBERCULIN IN THE DIAG-NOSIS OF TUBERCULOSIS IN CATTLE,

To the Editor of THE MEDICAL NEWS.

SIR: The last number of THE MEDICAL News contained a notice of the slaughter of a large number of Jersey cows suffering from tuberculosis, belonging to Mr. J. E. Gillingham, of Villa Nova. It was stated that tuberculin had been of assistance in making the diagnosis.

In order to appreciate the value of an agent used for this purpose, it is necessary to have an idea of the difficulties that stand in the way of making the diagnosis of tuberculosis in cattle in the ordinary way; that is, by means of the physical examination. The veterinarian has numerous difficulties to contend with in making physical examinations of his patients that do not trouble the ordinary medical practitioner. Still, except in the case of cattle, these difficulties are not insurmountable. In the cow, bred for milking, and the ox, for beef, the digestive function is all-important, and nature and breeding have developed the digestive organs at the expense of the thoracic cavity. The voluminous rumen is sometimes so distended with solid food that it presses forward against the liver and diaphragm, forcing them into the thoracic cavity, and giving rise to a dull percussion sound over the area where we expect to hear the clear sound yielded by percussion over a thick layer of healthy lung tissue.

This encroachment on the thoracic space is so irregular and sometimes so great that percussion of the posterior portions of the cow's lungs gives results of but little value. Auscultation also is interfered with by the very soft and indistinct breathing, and by the sounds arising in the thick layers of connective tissue separating the lobules of the lungs.

Again, tuberculosis in cattle is by no means confined to the lungs, and frequently exists in other parts of the body, as the bronchial glands, liver, intestinal walls, and mesenteric glands, leaving the lungs perfectly healthy.

In these cases, and they are not at all rare, it is next to impossible, except in the most advanced stages, to diagnosticate the disease by the physical signs. These circumstances have rendered laws dealing with tuberculosis and with other bovine scourges inoperative, or their passage inadvisable. It has been impossible for the veterinarian to detect the disease in its early stages, before it became dangerous to other cattle and to the consumers of the milk and beef,

I met this same difficulty when called upon to inspect Mr. Gillingham's herd of seventy-nine cattle. It was possible, relying upon the physical symptoms, to detect five cases of tuberculosis among all of the animals. It stood to reason that more were affected, for all had been exposed, and it is well known that the disease is contagious among cattle. But which of the animals were diseased? All, even those in which the disease had been detected, seemed, to the superficial observer, to be in good health. They were in good flesh; their appetites were regular and good; they were giving milk normal in color, taste, and quantity.

In this extremity it was decided to use tuberculin. This substance had already been used many times in European countries, and the reports concerning its use as a diagnostic agent were almost uniformly favorable.

The tuberculin used had been sent to Philadelphia about a year before, and it was perfectly clear.

The cows were given injections of doses ranging from 0.2 to 0.4 c.c., diluted with nine parts of a I per cent. solution of carbolic acid. The seat of injection was the right scapular region, and the skin was always carefully disinfected with creolin before the operation. The temperatures were taken at the time of injection, again after five hours had passed, again three hours later, and again for the last time after another period of three hours. To avoid possible error the observations were made at night, as the cattle were then quiet, and there was nothing to cause an accidental rise of temperature. It was observed after the injections that in some of the animals the temperature remained stationary, in some there was a slight rise, in some a decided rise, and in some a very great elevation of the temperature. Six of the cows that showed decided febrile reactions were killed publicly at Mr. Gillingham's farm March 16th. All of them were clearly tuberculous, as was demonstrated by the macroscopic and microscopic examinations. Drs. John Guitéras, E. O. Shakespeare, and A. C. Abbott kindly cooperated in the post-mortem examinations, and in each case were fully satisfied as to the tuberculous nature

The twenty-one remaining suspected animals were sent to the Veterinary Hospital of the University of Pennsylvania, and at this writing thirteen animals that reacted to tuberculin have been killed. The autopsies have showed tuberculosis in each case. As the full reports will be published in THE MEDICAL News when the investigation is completed, it is unnecessary to go into details of the particular cases in this communication, but the following will indicate the action of the tuberculin in two of the cows:

Cow No. 13. Injected with 0.25 c.c. tuberculin on March 8th, at 6.15 P.M.

Time. Temp. Time. Temp. Time. Temp. Time. Temp. 6.15 10130 12.30 10130 3.15 10130 6.15 10230

Killed March 30th. The bronchial glands were slightly enlarged, and contained small, cheesy nodes. One cheesy tubercle the size of a pea was found in the left lung. Two small tubercles were discovered in the liver.

Cow No. 35. Injected with 0.25 c.c. tuberculin on March 8th, at 6.50 P.M.

Time, Temp. Time. Temp. Time. Temp. Time, Temp. 6 50 102° 12.50 1013° 3.40 103° 6.45 1063°

Killed March 29th. A few cheesy nodules were found at the root of the right lung. The liver contained many small, cheesy tubercles. The uterine mucous membrane was thickly studded with tubercles the size of shot—some fresh, some cheesy. Many nodules were found on the peritoneum covering the spleen. The sublumbar lymphatics were tubercular.

So far as my experience goes, tuberculin seems to be a safe agent for the diagnosis of tuberculosis in cattle,

Very respectfully yours,

LEONARD PEARSON, B.S., V.M.D.

VETERINARY DEPARTMENT, UNIVERSITY OF PENNSYLVANIA.

AS TO LACTOPEPTINE.

To the Editor of THE MEDICAL NEWS,

SIR: Not long since a travelling salesman called on me in the interest of his preparations. After showing me a number of his leading articles, he brought out his samples of lactopeptine, saying that it was hardly necessary to show this, as all physicians used it. I told him that I had never prescribed a grain of it, and, morec ver, I never intended to do so. A very sarcastic and much surprised smile passed over his face, while he said that I was the first physician he had found that did not use it. He told me of one physician in North Carolina who employed it so extensively in his practice that his medical brethren had dubbed him "Lactopeptine Smith."

I have had experience in my student days with the prescription departments of several drug-stores, North and South, and have known something of the practice of several physicians, both of high and low standing. I found his remarks to be in a great degree true—some allowance, however, being made for the exaggeration of drummers. I am not surprised at medical men who are ignorant of all physiologic laws, and have no knowledge of scientific medicine, using lactopeptine. I am, however, very much astonished at a great many of the leading physicians of this country, together with a vast number of well-informed and intelligent medical men, for using and recommending to be used a compound nostrum that is contrary to physiology, thoroughly unscientific, and, as Austin Flint has expressed it, "a

therapeutic absurdity." Notwithstanding all this, one will find testimonials from some of the most prominent men that we have. A no less light than J. Lewis Smith, in his work on Diseases of Children, sixth edition, recommends a number of prescriptions containing lactopeptine. These men claim to be reasoners, having the facts before them, and to only act in anything after having found out, as nearly as possible, the reasons why. I can only explain it by thinking that they had been so engrossed with what they consider the "weightier matters of the law" that they have overlooked the simpler and plainer laws of digestion.

The only good thing that I can say of lactopeptine is that it is pleasant to the taste, and, provided it is free from all putrefactive ptomaines, that it is about as harmless a drug as can be used. Whenever a placebo is required

the elixir will do admirably well.

The Pharmacal Association says that lactopeptine contains pepsin, pancreatin, ptyalin, hydrochloric and lactic acids. These agents are said to be combined in the same proportion as is found in the digestive apparatus. It further adds that they are all the agents necessary for perfect digestion, so that this compound is a remedy for indigestion in any form. What a priceless boon this would be to the sufferers from this almost universal malady if these absurd and preposterous statements were true. Lactopeptine, truly, is a gunshot prescription, which makes it useless for us to bother with accurately diagnosticating any particular form of indigestion. It promises to cure, regardless of the special trouble. Most of us are ready to pay considerable homage to anything promising to save us work, while, at the same time, giving us the desired results.

On looking into the formula of lactopeptine, it must appear to every scientific man at the most casual glance that it contains one agent not probably necessary for digestion, others that are chemically incompatible, and still others that have no relation to the subject or influ-

ence upon the malady.

I will make these statements plainer by going somewhat into details:

- 1. Lactic acid is probably a by-product of digestion, and not essential to it. The most approved analysis of the gastric juice does not contain any mention of lactic acid (analysis by Bidder and Schmidt), Landois and Sterling, in the second edition of their Physiology, say that "lactic acid is usually met with in the gastric juice, but it arises from the fermentation of carbohydrates in the food," In the third American edition of Foster's Physiology, in speaking of the composition of gastric juice, it is said: "Lactic and butyric and other acids, when present, are secondary products arising by their respective fermentation from articles of food or from the decomposition of their alkaline or other salts." Arising, as it does, from the fermentation mostly of the carbohydrates, one can always safely depend on lactic acid being present, so that if it fills any office its place will not be vacant.
- 2. Pepsin acts only in an acid medium on proteids. Ptyalin and pancreatin act only in an alkaline medium on proteids, carbohydrates, and hydrocarbons. Thus it is seen that we have two sets of agents combined of which the chemical and physiologic properties and functions are entirely opposed.

3. If the muriatic acid be put in lactopeptine in sufficient quantity to be of any value in indigestion, it will probably destroy the properties of pancreatin and ptyalin by the prolonged contact, especially during the heat of summer. This may not, however, take place.

4. If the pancreatin and ptyalin escape the muriatic acid in the compound, certain death and absolute destruction await them in the stomach, for there the hydrochloric acid is in sufficient amount, and will surely destroy all of the properties previously possessed by these agents. It may be argued that they are not entirely destroyed, but that their functions are simply held in abeyance while in the presence of gastric digestion, and that they resume their activity as soon as they pass into the duodenum, where they find an alkaline medium. To all who would thus argue, allow me to cite some authority which will tend to substantiate the correctness of the aforesaid statement. Landois and Sterling (quoting Chittenden, Griswold, and Langley) say: "Ptyalin is destroyed by hydrochloric acid or digested by pepsin." Foster, in his Physiology, in speaking of the action of saliva, says: "Indeed, the presence of even a small quantity of free acid, at all events of hydrochloric, not only suspends the action, but speedily leads to permanent abolition of the activity of the juice.'

It is presumed that pancreatin means an extract of the whole juice, and is supposed to contain the main agents,

namely, trypsin, amylopsin, and steapsin.

Foster, in speaking of trypsin, says that "it is destroyed by heating with dilute hydrochloric acid to 40° C." (slightly above the body temperature). The same authority says the "amylolytic ferment is identical with ptyalin," therefore it would meet the same fate when brought in contact with the hydrochloric acid.

Landois and Sterling say: "As trypsin is destroyed by gastric digestion, obviously it is useless to give extract pancreas to a patient along with his food." They say, speaking of amylopsin: "All conditions which destroy the diastatic action of the saliva similarly affect its action." Bartholow, in his Materia Medica, says: "Pancreatin differs from pepsin in that its action is promoted by an alkaline medium and destroyed by strong Yeo, in Hare's System of Therapeutics, quotes Chittenden, thus: "Hence it is obvious that pancreatic extracts or ferments given by the mouth can be of no value whatever, since the proteolytic action will at least be undoubtedly destroyed in the stomach before it reaches its normal sphere of action." W. W. Johnson, in THE MEDICAL NEWS, March 12, 1892, says: "The objections to giving pancreatin after a meal are so obvious that few have much faith in its efficacy; even a short stay in the stomach on its way to the duodenum will expose it to the action of the gastric juice, and its activity as a ferment will be destroyed.'

It may be said that hydrochloric acid cannot have a destroying influence on pancreatin for the reason that dilute acid is used officinally in its extraction. This is true, but it is done at a moderately cool temperature. Heat it up to 98.6° F., and then see how much active pancreatin there is left. If there be any, add a little pepsin and some proteid substance, thus producing artificial digestion; now test for pancreatin, and it will be found that it will take a creative hand to bring back

that which was lost.

5. Hydrochloric acid is in too small amount to be of any material value as a pepsin-aider.

 The pepsin also is in too limited quantities to be of much worth except on the principles of homeopathy, and in that case the stomach would be convulsed with

fear of being digested itself,

The pepsin in the compound may possibly be of some value. The same can hardly be said of the muriatic acid on account of the small quantity. These two agents are the only ones that possess any show of merit; the others, as has been shown, are absolutely worth nothing thus combined and given. The foregoing are facts, and I challenge scientific contradiction. They are not by any means new, yet in the light of all these our physicians in these United States have thus caused to be sold a proprietary preparation the very composition of which proves physiologic ignorance and the prescription of which is quackery.

Some physicians will say that lactopeptine may be wrong from a chemical standpoint, but that they are justified in its use from practical experience. Allow me on this point to relate a little incident occurring during my clerkship in a drug-store in Baltimore. One of the most prominent physicians of that city used very frequently to come into our store and get a dose of elixir of lactopeptine to relieve him of indigestion. He prescribed it extensively in his practice, and got from it, he told me. excellent results. On one occasion he came in and took a tablespoonful to relieve him of an attack of indigestion caused by an excess of oysters. Two hours later he came back on some other business. I asked him if he was relieved. He said, "Why, certainly; lactopeptine acts on me like magic." The elixir that we gave him, and that he dispensed in his prescriptions, was all right save in one particular, that it contained absolutely no lactopeptine. For economic reasons the proprietor always left this out. If the elixir relieved him or any of his patients by virtue of the contained drug, it must have been by some unknown dynamo-homeopathic force. Thus, in a limited way, one may see the value of competent human testimony as to practical results.

I would like the editor of THE MEDICAL NEWS to expose in his characteristically fearless manner not only this worthless nostrum, but several others in the use of

which the medical profession is gulled.

YORKVILLE, S. C.

GEORGE WALKER.

URIC ACID AND RHEUMATISM.

To the Editor of THE MEDICAL NEWS,

SIR: THE MEDICAL NEWS of March 19, 1892, contains a criticism by Dr. James Wood on the article, "Is Uric Acid a Prime or Sole Factor in the Causation of Rheumatism?" in THE MEDICAL NEWS of February 13, 1892. Dr. Wood denies that uric acid is produced in the system by a stimulating, nitrogenous diet and the use of alcoholic beverages. The statement, however, is substantiated by good authority. I might add that certain nervous influences, sedentary habits, too free ingestion of carbohydrates and hydrocarbous, CHO compounds, are also etiologic factors in its production. I made no assertion, as claimed, that a nitrogenous diet is stimulating.

Dr. Wood finally arrives at the same affirmative con-

clusion in his theoretic reasoning as myself, viz., that the suboxidation of proteid or nitrogenous foods by too free ingestion of the CHO compounds, and alcohol, results in the production of uric acid, which circulates through the tissues of the body.

Reasoning from cause to effect, the greater the amount of nitrogenous foods, CHO compounds, and alcohol ingested, the larger the quantity of uric acid that must be produced. The excess of uric acid in the urine above normal, as shown by examination, is the expression of the amount of these foods ingested above that oxidized

and assimilated in the system.

It is also denied that "uric acid by its irritating influence upon the lower-grade tissues of the body gives rise to the rheumatic attack;" it is stated, however, that lactic acid is the factor producing it. The statement and reasoning are purely hypothetic, and so acknowledged by standard authorities. It is a well-known fact that uric acid is a purely excretory substance, eliminated from the system as a dangerous factor to its well-being—when produced under normal conditions; if present in excess of the power of the system to eliminate, then it circulates through the tissues as a powerful, irritant poison. Is it not logical to infer that many inflammatory processes, viz., rheumatism, neuritis, endocarditis, endarteritis, tubal nephritis, etc., result from this irritation?

These deductions are substantiated by clinical observations that cannot be ignored. These inflammatory processes are often associated, the urine at the same time showing an excess of uric acid, which is but the reflection of what is taking place in the body, viz., the exces-

sive production of uric acid.

The treatment of rheumatism helps to confirm these deductions: limiting the quantity of nitrogenous foods, CHO compounds, and alcoholic beverages, so that the amount is not greater than the system can properly care for, assisting assimilation by change of habits (sufficient exercise and outdoor air), attention to the digestion and regulation of the functions of the liver by appropriate medication, and the administration of remedies to clear out the excess of uric acid from the system. If such a course be followed, the result is seen in the checking or "curing" of the rheumatic attack.

The final objection of Dr. Wood is to the education of our rheumatic patients in an intelligent watchfulness over the citadel of their souls: in the selection of proper food, abstinence from too free a nitrogenous diet and the imbibition of alcoholic beverages. I may also add that the CHO compounds should be used sparingly.

I regard the condition of the urine, as regards quantity, appearance, hyperacidity, etc., an almost infallible guide in rheumatic affections. The use of the mineral waters—Vichy, seltzer, Carlsbad, and the Manitou soda of my own State—is to be commended. The habitual use of the mineral waters by rheumatics is the best treatment (medicinal) to maintain a healthy equilibrium in the system.

Finally, Dr. Wood asserts that "If humanity should receive the education, all diseases of which the great etiologic factor is decreased nutrition and vitality would be greatly increased." Such an hypothesis seems to me absurd and not sustained by chemico-physiologic or pathologic facts. On the contrary, such an education,

F. MALL.

if followed out, would tend to restore an already weakened nutrition and vitality, caused by the imperfect oxidation and assimilation of food-products, of which uric acid is but the expression, and prevent the dire results predicted by my critic.

Very respectfully,

W. E. SHOTWELL, M.D.

DENVER, COLORADO.

REPORTS OF CONTAGIOUS DISEASES.

To the Editor of THE MEDICAL NEWS,

SIR: There is no question that "an ounce of prevention is better than a pound of cure," and if, in the administration of the Health Department of a great city like Chicago, the spread of contagious diseases can be prevented by enforcement of the health laws of that city, there is compensation enough in the good health of the citizens to justify whatever measures are used to hold these diseases in check. Whether it be the "bar-baric placard nailed to the door," or the rigid quarantine which temporarily houses the inmates of a home in which such contagious disease exists, or whether it be isolation in some contagious hospital, the end justifies the means. We have the satisfaction of knowing that the public health, at least, will not suffer. Chicago physicians should feel proud of their Health Warden, and lend him all honorable means and methods at their disposal to purge that city of its plague of contagious diseases. It is opportune, in the interest both of scientific medicine and public health, that statistics be gathered regarding the prevalence of typhoid fever in that great city. If some prominent physicians refuse to return statistics or reports of contagious diseases, because they are not paid for it, it will lead the medical world to believe that they too are a part and parcel of the cartoon presented in the Inter-Ocean's contest, representing Chicago as grasping for the "almighty dollar." If love for his profession and the record of its scientific progress, and the welfare of his own city, are not motives enough to prompt any Chicago physician to let the dollar question drop, then we believe that the old Hippocratic oath is entirely too barbaric for Chicago. The question, "What right has the city to ask a physician to do its work for nothing?" is answered by saying that the love of home, of city, of country, and of scientific medicine ought to make a physician regard his services as complimentary and above money value, when the knowledge he possesses is capable of being utilized to their good,

FRANK P. NORBURY, M. D.

JACKSONVILLE, ILLINOIS

A REQUEST FOR EMBRYOLOGIC MATERIAL.

To the Editor of THE MEDICAL NEWS,

SIR: During the last few years the kindness of several physicians has enabled me to procure for study about a dozen human embryos less than six weeks old. As a specialist in embryology, I ask if you can aid me in procuring more material. I would be indebted to any readers of The Medical News who would send me such specimens.

Care should be taken that the specimen be not injured by handling; nor should it be washed with water. It may be carefully placed in a tumbler, and as soon as possible preserved in a bulk of alcohol (eighty per cent.) at least five times as large as that of the ovum. If the ovum is not larger than a pigeon's egg, it should not be opened before hardening. When a specimen is to be sent by express, it should be placed in a bottle completely filled with alcohol, with a very loose plug of absorbent cotton both above and below it.

Thanking you in advance for any aid that you may

be able to give me,

I am, very truly yours,

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CLARK UNIVERSITY, WORCESTER, MASS.

REVIEW.

A SYSTEM OF PRACTICAL THERAPEUTICS. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia; assisted by WALTER CHRYSTIE, M.D. In three volumes. Volume II.: Fevers; Diseases of the Respiratory System, Circulatory System, and Hematopoietic System; Diseases of the Digestive System. Large octavo, 1148 pages, with 96 illustrations. Philadelphia: Lea Brothers & Co., 1892.

In an exhaustive treatise like that under review, in which the different sections represent the work of different writers, it is inevitable that there should be some inequality among its various parts. The very arrangement of the book tends to bring out in full force the points of contrast and comparison between the different articles. These differences were less marked in the first volume than they are in this, the second, partly because of the smaller number of subjects there considered and the smaller number of contributors. Even the casual reader cannot escape being struck by the fact that there is a good deal of repetition, not at all harmful, but perhaps obviable. This is particularly so with regard to the acute infectious diseases, in consideration of which, especially in indicating the lines of prophylaxis, a good deal of the same ground is gone over several times. The individual articles are not thereby weakened, but the interest of the consecutive reader is likely to lag. It is obvious that in many instances a mere recitation of the therapeutic procedures to be employed in a given condition could be made in a few lines; but interest is given to the subject by appropriate clinical and pathologic considerations. The work is not solely a Therapeutics in the narrow sense of the word. Its practical bearing must constitute its most valuable feature. A little more care in editing might have prevented several typographic and grammatic errors. We can only refer to the more important articles. Dr. Robert W. Taylor contributes an aggressive article on Syphilis. He speaks from a large experience; and while some may differ with him on certain points, it must be admitted that his opinions carry with them the weight of authority. Dr. J. Lewis Smith in an able manner discusses the treatment of Scarlatina, Measles, Rötheln, and Varicella. The article of Dr. William H. Welch on the treatment of Smallpox is a most valuable one. Dr. Frederick P. Henry presents a most thoughtful consideration of the treatment of Typhoid Fever. The article is one of the best in the volume. One statement is worthy quotation: "A bedsore has no

legitimate place in the clinical history of typhoid fever. It is neither a complication nor an intercurrent affection: it is a blunder." Dr. George Dock explains the mode of activity of quinine in malarial diseases, and describes the different methods of administering the remedy. Dr. J. C. Wilson presents a concise résumé of the measures to be employed in the treatment of Cerebrospinal Fever. In his article on Diphtheria and Croup, Dr. I. Chalmers Cameron accepts the identity of the two affections, and necessarily advises a common treatment for both. Dr. James T. Whittaker contributes interesting papers on Asthma, Acute and Chronic Bronchitis, and Whooping-cough. The subject of Diseases of the Pleura has been most ably and fully handled by Dr. Rudolph Matas. Dr. T. Lauder Brunton presents a most interesting consideration of the Nervous Diseases of the Heart. The article on Acute and Chronic Gastric Catarrh, Gastric Atrophy, Gastric Ulcer, Gastric Cancer, and Gastric Dilatation, by Dr. D. D. Stewart, is most creditable to its author, and shows evidence of much careful thought, Dr. Edward Martin contributes a practical paper on Obstruction of the Intestines. Dr. Roswell Park furnishes the indications for treatment in Peritonitis, Appendicitis, and Perityphlitic Abscess, Dr. Charles B. Kelsey fully considers Diseases of the Rectum and Anus.

NEWS ITEMS.

On the Death of Dr. Agnew.—At a meeting of the Medical Faculty of the University of Pennsylvania, held Thursday, March 24th, the following minute was adopted:

The Faculty of the Medical Department of the University of Pennsylvania desires to place on record its profound grief at the irreparable loss sustained in the death of Dr. D. Hayes Agnew, and to express its thorough appreciation of the nobility of his personal character and the enduring excellence of his professional achievements.

Dr. Agnew was for years a regular attendant at the meetings of this Faculty, and his wise counsel, his unswerving advocacy of every progressive movement, and of all that tended to raise the standard of teaching and of the profession, have left their indelible mark on the history of its proceedings.

*As a didactic lecturer he was unsurpassed. Without apparent effort and with a skill born of thorough knowledge and perfect mastery of his theme, each subject was presented to the student so clearly, simply, and directly, that it remained a part of his medical knowledge.

As a clinical lecturer, his enormous experience and his diagnostic and operative skill made him preëminent. That skill, which amounted to genius, was the foundation of his scientific greatness, and often enabled him at a glance to detect conditions which had eluded the search of others. No clinical observation, even in times long past, escaped his memory, and his experience, almost without exception, furnished a parallel to the rarest and most obscure cases. He had, in addition, the faculty of elucidating in a few words the methods by which he reached his conclusions, and this unusual combination of qualities gave him his unquestioned position as the lead-

ing teacher and practitioner of surgery in this country. His colleagues can bear witness to his warm friendship, which never failed in time of need; to his genuine love for his work and his eager desire to acquire every new fact that might benefit his patients; to his generous support of the feeble, the halting, and the unfortunate in the profession; to his respect for every honest opinion, even if it differed from his own; to his quick and ready sympathy and his tender treatment of all those who claimed either his personal or his professional help. His gentle courtesy and kindly bearing won the love of all with whom he came in contact. To the members of this Faculty—his students of years gone by, his colleagues of yesterday, and always his loving friends—his death comes as a personal bereavement.

AT a meeting of the graduating class of the Medical Department of the University of Pennsylvania the following preamble and resolutions were adopted:

Whereas, It has pleased the Inscrutable to take from us our most beloved Emeritus teacher and counsellor D. Haves Agnew:

Resolved, That the members of the medical class of 1892, of the University of Pennsylvania, do hereby express their sincere sorrow at the termination of this noble and mature, yet still fruitful life.

Resolved, That the memory of his pure, unselfish character shall be cherished by them as an inspiration in their life-work.

Resolved, That a copy of these resolutions be forwarded to the bereaved widow, and that they be published in the University Medical Magazine, in THE MEDICAL NEWS, and the daily papers.

The Pan-American Medical Congress.—A legal form of application for Articles of Incorporation of the Pan-American Medical Congress was made in Cincinnati on March 15, 1892. At a meeting of the Incorporators held on the following day, regulations recommended by the Committee on Permanent Organization were adopted. The first Congress will be held at Washington, September 5, 6, 7, and 8, 1893. The following countries will be represented:

Argentine Republic, Bolivia, Brazil, British North America, British West Indies (including B. Honduras), Chili, Honduras (Sp.), Mexico, Nicaragua, Paraguay, Peru, Salvador, Colombia, Costa Rica, Ecuador, Guatemala, Haiti, Hawaiian Islands, Santo Domingo, Spanish West Indies, United States, Uruguay, Venezuela, Danish, Dutch, and French West Indies.

The languages of the Congress will be Spanish, French, Portuguese, and English.

There will be Sections in: (1) General Medicine, (2) General Surgery, (3) Military Medicine and Surgery, (4) Obstetrics, (5) Gynecology and Abdominal Surgery, (6) Therapeutics, (7) Anatomy, (8) Physiology, (9) Diseases of Children, (10) Pathology, (11) Ophthalmology, (12) Laryngology and Rhinology, (13) Otology, (14) Dermatology and Syphilography, (15) General Hygiene and Demography, (16) Marine Hygiene and Quarantine, (17) Orthopedics, (18) Diseases of the Mind and Nervous System, (19) Oral and Dental Surgery, (20) Medical Pedagogics, (21) Medical Jurisprudence.

Contributors are requested to forward abstracts of their

papers, not to exceed six hundred words each, so as to be in the hands of the Secretary-General, Dr. C. A. L. Reed, Cincinnati, Ohio, not later than the tenth of July. 1803. These abstracts will be translated into English. French, Spanish, and Portuguese, and will be published in advance of the meeting for the convenience of the

Congress.

The following have been elected Trustees: Dr. W. T. Briggs, Tennessee: Dr. George F. Shrady, New York: Dr. P. O. Hooper, Arkansas: Dr. S. S. Adams, District of Columbia; Dr. H. O. Marcy, Massachusetts; Dr. J. F. Kennedy, Iowa: Dr. H. D. Holton, Vermont: Dr. L. S. McMurtry, Kentucky; Dr. N. S. Davis, Illinois; Dr. Levi Cooper Lane, California; Dr. I. N. Love, Missouri; Dr. Hunter McGuire, Virginia; Dr. J. C. Culbertson, Illinois: Dr. A. Walter Suiter, New York: Dr. C. H. Mastin, Alabama.

Drs. L. S. McMurtry (Ky.), I. N. Love (Mo.), and W. W. Potter (N. Y.) were designated to act as members of the Executive Committee.

A Laryngectomy in Jefferson Medical College Hospital. At his regular clinic, on April 1st, with the assistance of Professor W. W. Keen and the Surgical Chief, Dr. O. Horwitz, Professor J. Solis-Cohen excised the entire larvnx and the first ring of the trachea from a man forty-five years of age, leaving the epiglottis in position. The case was one of extensive sarcoma of the larynx, protruding externally. Prophylactic tracheotomy had been performed for Dr. Cohen by Professor Forbes at one of the clinics of the latter, and subsequently Dr. Cohen, with the assistance of Dr. Forbes, had removed an external growth with a large circumference of integument, and had then split the larynx and shelled out the intra-laryngeal portion of the growth. Recurrence ensuing, laryngectomy was practised as the sole procedure adequate to effective removal.

The operation was quite difficult on account of changes due to the previous operations. It consumed one hour, two ounces of chloroform, carefully administered by Dr. Williams, sufficing to keep the patient anesthetized.

A tampon-canula was introduced, and the trachea was packed with gauze above this. A soft stomach-tube was introduced through the wound, the edges of which were loosely stitched without any dressing in the pharynx, Dr. Cohen having observed that dressings in the pharynx produce a continuous desire to swallow, which is very annoying to the patient. The patient was put to bed with his head lower than the shoulders, so as to secure drainage through the mouth.

As we go to press we learn that the patient has been fed by enemata; that the tampon-canula was removed from the trachea on the third day and replaced by an ordinary double canula, and that the patient was able to swallow a few ounces of milk on the fourth day, so that thus far there has been no use for the stomach-tube. The case is progressing very satisfactorily.

Philadelphia Polyclinic Hospital.—An examination for the position of two internes and two externes in the Hospital of the Philadelphia Polyclinic will be held May 3, 1892. The Committee will meet and examine the candidates on the date named, at 8 P.M., in the Hospital building, Lombard Street, west of Eighteenth,

A number of clinical assistants will be appointed. Application should be made to the Committee: G. E. de Schweinitz, M.D., H. Augustus Wilson, M.D., S. Solis-Cohen, M.D., T. S. K. Morton, M.D., and Harris A. Slocum, M.D.

The Association of Military Surgeons of the National Guard of the United States will hold its second annual meeting at St. Louis, Mo., April 19, 20, and 21, 1892. Papers will be read and discussed by regular Army and Navy and National Guard medical officers.

Teaching the Deaf .- The annual summer meeting of the American Association to Promote the Teaching of Speech to the Deaf will be held from June 22d to July 1st inclusive, at Crosbyside Hotel, Lake George, N. Y. This will in no wise conflict with the proposed conference of principals and superintendents of deaf and dumb institutions in Colorado.

BOOKS AND PAMPHLETS RECEIVED.

Announcement of the Twenty-ninth Annual Course of Lectures of the Medical Department, University of California, 1892.

The Pocket Pharmacy, with Therapeutic Index. By John Aulde, M.D. New York: D. Appleton & Co., 1892.

Die Behandlung der Tuberkulose mit Tuberkulocidin? Verlaufige Mitteilung von Professor Dr. E. Klebs, in Zurich. Fünfte Auflage. Hamburg und Leipzig: Verlag von Leopold Voss. 1802.

Transactions of the Medical and Chirurgical Faculty of the State of Maryland, Ninety-third Annual Session, at Baltimore,

Md., April, 1891. Baltimore: Griffith, Curley & Co., 1891.
A System of Practical Therapeutics. Edited by Hobart Amory Hare, M.D., assisted by Walter Chrystie, M.D. Vol. II. Fevers: Diseases of the Respiratory, Circulatory, and Hematopoietic Systems; Diseases of the Digestive System. With Illustrations. Philadelphia: Lea Bros. & Co., 1892.

Observation and Experiment in Phthisis. By Thomas J. Mays,

M.D. Reprint, 1892.

Obstetric Problems. By D. T. Smith, M.D. Pamphlet. Illustrated. Louisville: J. P. Morton & Co., 1892.

Acute Inversion of the Virgin Uterus. By William A. Edwards, M.D. Reprint, 1892.

An Address upon the late Joseph Leidy, M.D., LL.D.: His University Career. By William Hunt, M.D. Delivered November 17, 1891, before the Alumni and Students of the Medical Department of the University of Pennsylvania. Philadelphia: Collins Printing House, 1892.

Report of the Commissioner of Education, 1888-1889. Two volumes. Washington: Government Printing Office, 1891.

Transactions of the American Surgical Association. Vol. IX. Edited by J. Ewing Mears, M.D. Philadelphia: William J. Dornan, 1891.

The Principles and Practice of Medicine. Designed for the Use of Practitioners and Students of Medicine. By William Osler, M.D., F.R.C.P. Lond., Professor of Medicine in the Johns Hopkins University of Baltimore, etc. New York: D. Appleton & Co., 1892.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment, provided that the request for reprints be noted by the author at the top of the manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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